

Mid-Term Review

Integrated Adoption of New Energy Vehicles in China (GEF Project ID #9226)

FINAL REPORT



June 2021

Table of contents

Acknowledgments	I
Abbreviations and acronyms	II
Glossary of evaluation-related terms	III
Executive summary	1
1. Evaluation objectives, methodology and process.....	6
1.1 Background Information on this Mid-Term Review (MTR)	6
1.2 Objectives and Scope	6
1.3 Evaluation Methodology.....	7
1.4 Limitations	7
2. Project background.....	8
2.1 Brief Country Context	8
2.2 Sector-Specific Issues of Concern to the Project	9
2.3 Project summary	11
2.3.1 Fact sheet of the project	11
2.3.2 Brief description including history and previous cooperation	12
2.3.3 Project implementation arrangements	13
2.3.4 Positioning of the UNIDO project	14
2.3.5 Counterpart organization(s)	15
3. Evaluation findings.....	17
3.1 Project Design Assessment.....	17
3.1.1 Project design.....	17
3.1.2 Project results framework/logframe.....	18
3.2 Project Performance and Progress Towards Expected Results.....	18
3.2.1 Relevance.....	18
3.2.2 Effectiveness and Progress Towards Expected Results	20
3.2.3 Efficiency.....	44
3.2.4 Gender Mainstreaming.....	45
3.2.5 Sustainability	45
3.3 Project Implementation Management.....	49
3.3.1 Project Management.....	49
3.3.2 Results-Based Work Planning, Monitoring and Evaluation, Reporting.	50
3.3.3 Financial Management and Co-Financing	51
3.3.4 Stakeholder Engagement and Communication	52
3.4 Performance of Partners	53
3.4.1 UNIDO.....	53
3.4.2 National Counterparts	53
3.4.3 Donor	54
4. Conclusions, recommendations and lessons learned	55
4.1 Conclusions.....	58
4.2 Recommendations.....	58
4.3 Lessons learned.....	61
Annex 1. Evaluation ToR.....	64

Annex 2. List of Documents Reviewed	102
Annex 3. List of Stakeholders Consulted.	104
Annex 4. Financial Data.	106

Acknowledgments

This independent mid-term review of the GEF-funded project, ‘Integrated Adoption of New Energy Vehicles in China’ was prepared by an independent consulting agency, Chinese Research Academy of Environmental Sciences.

The Evaluation Team conveys its gratitude to all those who provided input and support. These contributions and the quality of reflection have facilitated the development of robust findings, lessons learned, and recommendations, which are offered with the aim of providing an outside view and inspiration for enhancing the project’s performance in later stage and integrating its results and benefits into the national fabric in ways that provide legacy and drive catalytic impact.

Sincere appreciation is extended to the project’s management, supervisors, counterparts, and other actors interviewed remotely in Rugao and Qingdao and in person in Beijing and Shanghai during the mission. Thanks to the strong support and enthusiastic cooperation of UNIDO (including UNIDO Beijing Office), SAE-China and SIAC in the evaluation. The authors also thank all reviewers of this report for their guidance and constructive comments, with special thanks to Katarina Barunica Spoljaric, Nicholas Dehod, Rana Ghoneim, Mark Draeck, Onay Geylan, Alexia Cujus, Weijun Shen, Johanna Kueppers, Martin Lugmayr, Shahinda Elsayed from Energy Department, Energy Systems and Infrastructure Division, UNIDO and Tareq Emtairah from Energy Department, Office of the Director, UNIDO. Their review does not imply an endorsement, and any errors are the authors’ own.

Chinese Research Academy of Environmental Sciences

Dr. Pan Cenxuan and Ms Yin Jie, Team Leaders

Ms Dou Guangyu, Ms Peng Di, Mr. Yuan Xinan and Mr. Zhu Kesong Evaluation Consultants

Delivery date: June 2021

Abbreviations and acronyms

CNY	Chinese Yuan
EV	Electric Vehicle
HDI	Human Development Index
GDP	Gross Domestic Product
GEF	Global Environment Facility
KPI	Key Performance Indicator
KWh	Kilowatt Hours
M&E	Monitoring and Evaluation
MEE	Ministry of Ecology and Environment, China
MIIT	Ministry of Industry and Information Technologies, China
MOF	Ministry of Finance, China
MTR	Mid-Term Review
NDRC	National Development and Reform Commission, China
PIR	Project Implementation Report
PMO	Project Management Office
PSC	Project Steering Committee
RE	Renewable Energy
R&D	Research and Development
RECP	Resource Efficient Cleaner Production
SAE-China	China Society for Automotive Engineers
SDG(s)	Sustainable Development Goal(s)
SIAC	Shanghai International Automobile City
SMART	Specific, Measurable, Assignable, Relevant, Time-Specific
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USD	United States, US dollar

Glossary of evaluation-related terms

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change directly or indirectly due to an intervention.
Effectiveness	The extent to which the development intervention's objectives were achieved or are expected to be achieved.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Impact	Positive & negative, intended & non-intended, directly & indirectly, long term effects that represent fundamental durable change in the condition of institutions, people & their environment brought about by the Project.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Intermediate States	The transitional conditions between the Project's outcomes & impacts which must be achieved in order to deliver the intended impacts.
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations.
Logframe (logical framework approach)	Management tool drawing on results-based management principles used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcomes, impacts) and their causal relationships, indicators, and assumptions that may affect project success or failure.
Outcomes	The likely or achieved short- to medium-term behavioural or systemic effects to which the Project contributes, which help to achieve its impacts.
Outputs	The products, capital goods, and services that an intervention must deliver to achieve its outcomes.
Relevance	The extent to which an intervention's objectives are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed.
Target groups	Specific entities for whose benefit an intervention is undertaken.

Executive summary

Evaluation Background and Methodology

This document is the MTR Report on the ‘Integrated Adoption of New Energy Vehicles in China’ (hereafter, the IANEV project) initiated on August 2018 to December 2021 (extended to March 2022) under grant support by the GEF with additional grant and in-kind contributions provided by the involved partners.

The IANEV project is executed by MIIT, and implemented by UNIDO. SAE-China has been entrusted by MIIT to handle day-to-day operation of the project, and hosted the PMO that conducted execution, including recruiting consultants and sub-contractors, keeping track of their progress, elaborating technical and financial progress reports. Yancheng’s Economic and Technological Development Zone Management Agency and SIAC play the leading role in executing activities with regard to the demo. Some other national-level government organizations including MOF have also participated in the project.

The MTR was carried out during November 2020 to February 2021 by an independent team consisted by 6 consultants from Chinese Research Academy of Environmental Sciences (CRAES), with the aim to assess the project’s performance and progress towards the achievement of the expected results, to assess remaining barriers in project design, project management and performance of executing partners to identify the necessary changes to set the project on-track to achieve its expected results in time, and to develop recommendations and a follow-up plan on necessary corrective actions.

In order to achieve the above goals, the following work was carried out: i) desk review of relevant documentation; ii) assessment of project design; iii) field inquiry with face-to-face meetings with stakeholders, implementing partners and beneficiaries in Shanghai; and iv) analysis and development of evidence-based findings, recommendations, and lessons learned.

Summary of the Main Evaluation Findings

Project Design

Finding 1: The project design is seen as sound and appropriate, technically feasible and able to address the problems at hand. The project’s financial, institutional and implementation arrangements are reasonable and make the best use of limited resources. The M&E plan has been established. However, the failure to adequately assess the risks during the project design phase led to a delay in the implementation of the Yancheng demo.

Finding 2: The project’s result-chain is clear and logical. It provides good support for activities development, sub-contracting and M&E.

Relevance

Finding 3: The project is highly relevant for national development priorities, the intended

beneficiaries, and implementing partners. It is fully pertinent to UNIDO's mandate and domains of comparative advantage and fully aligned with the donor's focal area priorities with respect to climate change mitigation.

Effectiveness and Progress towards Expected Results

Finding 4: Most of the activities went smoothly as planned, and achieved the expected results, especially Shanghai demo. However, the activities of Yancheng demo are stagnant. The project implementation should be speeded up in the future, especially the Qingdao demo, so as to ensure that the subsequent activities related to the dissemination of the pilot experience can be carried out on schedule.

Efficiency

Finding 5: The project has gained efficiencies in good project management, strategic use of funds and co-financing. Regarding the funding: the GEF fund was generally used as planned, and has achieved a good leveraging effect. Regarding the timing: the project deadline is expected to be extended to March 2022. The stagnation of Yancheng demo led to time inefficiency. In addition, some meetings and trainings were re-organized in implementation, which effectively improved the efficiency of the project.

Gender Mainstreaming

Finding 6: There were many gender-related indicators in the results framework. Women played a key role in the project. Some of the activities were carried out with active participation of women such as electric bus rental demo. Although a large number of gender-related indicators were designed in the results framework, the details of them were not described in the PIRs.

Sustainability

Finding 7: The project's objective of reducing carbon emissions and addressing climate change is highly consistent with national and global development strategies. During the project implementation, some policy documents related to EV-RE integration have been formed and released, which will also play a positive role in the further promotion of the project results.

Finding 8: The strengthening of national policy generally means an increase in government funding support. The subsidy policies for EV and RE will continue. In addition, pilot studies have also been conducted for the business model of EV-RE integration. Some of the demonstrations have already or are expected to achieve good economic benefits to support the further sustainability of the project outputs.

Finding 9: After the project, activities related to EV-RE integration will mainly rely on governments and market players. The project has got a good effect on the cultivation of the market. The technical and policy elements required to support the continuation and replication of the project have been basically formed, and some of the relevant training and promotion activities have been carried out.

Finding 10: The project is conducive to reducing carbon emissions, which has a positive impact on the ecological environment in China and the world, with no adverse environmental impacts likely to affect the sustainability of benefits.

Project Implementation Management

Finding 11: National PSC and PMO have been established. In demo cities, local PSC, PMO and expert committee have also been set up. Communication between the stakeholders is smooth and transparent, and most of partners can complete the assigned tasks in a timely and effective manner. The PSC meetings are held regularly. There have been personnel changes in some agencies. Most of the changes have not affected project implementation, except for the Yancheng demo. SAE-China communicated with UNIDO and GEF in time and solved the problem, significantly reducing the negative impact.

Finding 12: The project's results framework was used as a management tool to guide development of work plans and to regularly monitor and report on results. There are project plans in the contract and PIRs. The project consumed more time at start-up, and the activities can be carried out as planned. An effective M&E plan is in place and appropriate funding is allocated to it. The project execution agency submitted biannual and annual PIRs on time, but the reports do not provide sufficient information on some of the KPI indicators.

Finding 13: GEF allocated project funds timely as planned, and the funds were used in accordance with the terms and conditions of UNIDO, MOF, and the project management approach. Co-financing provided has reached 82% (see Annex 4) and were used as planned. The projects in Shanghai were subsidized after implementation, which guaranteed the projects quality, but also resulted in a lower funding utilization rate (The sub-contractors can only get about 30% of the expected funding support after the project is recruited and reviewed from SIAC).

Finding 14: Government stakeholders support project objectives and have an active role in decision-making through their engagement as implementing partners. The external communication mechanism of this project is well established, with an adequate budget, and has effectively promoted public awareness through holding large-scale meetings, establishing a publicity website, etc. The internal communication mechanism is smooth, and when problems arose, the project activities can be adjusted in time.

Performance of Partners

Finding 15: UNIDO's involvement is highly valued for its contribution of technical expertise, networks, thought leadership, and ultimate responsibility for the project, as GEF's implementing agency. The project manager of UNIDO has strong organization and coordination skills.

Finding 16: Relevant national ministries such as MIIT and MOF have been engaged as PSC members, fostering national ownership, assuring their influence on the project's efficient and

effective implementation, and facilitating inter-departmental coordination. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project. SAE-China organized the activities and communicated with stakeholders in a timely manner.

Finding 17: As a donor organization, GEF readily approved the project design upon its initial submission, disbursed project funds in a timely manner.

Summary of Recommendations and Lessons Learned

Four recommendations are offered to enhance the project's performance in later stage:

Recommendation #1: It is suggested that MEE and NDRC are included into the PSC. The benefits of the project in the field of energy and environment should be summarized. Besides, the projects can try to attract more people from relevant fields like energy and environment to participate in.

Recommendation #2: The demonstration scale is limited, and should be strengthened. The PMO should have full-time staff concentrating on this project, and strengthen the tracking of KPI indicators, such as carbon emission reduction and women's participation. These indicators should also be described in detail in the PIRs according to the results framework.

Recommendation #3: The evaluator believes that the project can be completed within the deadline. However, further risk assessments need to be conducted, and the project plan should be appropriately adjusted based on the assessment results, so as to ensure the successful completion of the project objectives. For activities planned for adjustment, studies should be organized as soon as possible.

Recommendation #4: Speed up the process of demonstration work, especially accelerate the implementation of Qingdao demo. SAE-China and UNIDO should supervise the project implementation in a timely manner. Shanghai demo should promote the data connection of the Energy Management Center.

Four key lessons have been crystallized from the IANEV project experience, which provide valuable food for thought for ongoing and future programme formulation and implementation:

Lesson #1: The project design is in line with the general direction of energy saving and low carbon development in China, which is the basis for the successful implementation of this project.

Lesson #2: The correct choice of project executors and the project managers play a key role in the smooth implementation of the project.

Lesson #3: A well-developed project management organization helps to ensure the project progress.

Lesson #4: Effective project management contributes to the high quality of the project, and the

innovative management models, such as project recruitment and implementation before subsidy, have played an important role in the success of the Shanghai demo.

These recommendations and lessons are fully anchored in the evidence, analysis, justifications, and conclusions of the MTR. Elaborated in the report's final chapter, they are set in context and assigned a priority and lead responsibility for taking forward.

1. Evaluation objectives, methodology and process

1.1 Background Information on this Mid-Term Review (MTR)

The IANEV project was initiated on August 2018 to December 2021 (extended to March 2022) under grant support by GEF with additional grant and in-kind contributions provided by the involved partners: Yancheng Municipal State-Owned Asset Investment Group, Yancheng Oriental Investment and Development Group, SIAC, SAE-China and UNIDO. The China EV R&D Project (formally named “Vehicle Technologies in China”), being carried out by China International Center for Economic and Technical Exchanges (an institution under China’s Ministry of Commerce), SAE-China, and UNIDO, is very important to the IANEV project. Its second-year overlapped with the first year of the IANEV project. The R&D project is considered a partner project to the IANEV project. The research and analysis from the R&D project were used in design of the IANEV project. The R&D project addresses the promotion of China’s EV sector more generally, rather than EV-RE integration in particular.

The IANEV project is executed by MIIT, and implemented by UNIDO. SAE-China is entrusted by MIIT to handle day-to-day operation of the project, and hosts the PMO that conducted execution, including recruiting consultants and sub-contractors, keeping track of their progress, elaborating technical and financial progress reports. Yancheng’s Economic and Technological Development Zone Management Agency and SIAC play the leading role in executing activities with regard to the demo. Some other national-level government organizations including MOF have also participated in the project.

Following UNIDO Evaluation Policy¹ and the GEF Monitoring and Evaluation Policy², this MTR was carried out during November 2020 to February 2021 by an independent team.

1.2 Objectives and Scope

Guided by the ToR and evaluation criteria provided by UNIDO (see Annex 1), which set out the aims, design, scope, and conduct of this endeavor, the MTR had three objectives:

- Assess the project’s performance and progress towards the achievement of the expected results.
- Assess remaining barriers in project design, project management and performance of executing partners to identify the necessary changes to set the project on-track to achieve its expected results in time.
- Develop recommendations and a follow-up plan on necessary corrective actions.

In terms of scope: the MTR covered the project activities from August 2018 to July 2020. But

¹ UNIDO (2015). Director General’s Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1) and UNIDO’s Evaluation Policy and Evaluation Manual (2018), Technical Cooperation Programmes, Projects and Tools (2017)

² GEF (2010). Evaluation Document #4, www.gefio.org/sites/default/files/ieo/evaluations/gef-me-policy-2010-eng.pdf and Guidelines for GEF Agencies in Conducting Terminal Evaluations, Minimum Fiduciary Standards for GEF Implementing and Executing Agencies

some recent new activities and information during the evaluation were also included in the report. The MTR mainly focused on the achievement of the expected results indicated in the project logical framework, and in particular on the aspects of relevance, effectiveness in delivery, efficiency, impact, sustainability, management as well as cross-cutting issues such as gender mainstreaming.

1.3 Evaluation Methodology

The MTR used a participatory approach where key stakeholders were kept informed and consulted throughout the process. The evaluation team was aware of the opportunity to liaise with UNIDO's Independent Evaluation Division (ODG/EVQ/IEV) on the conduct and methodology of the evaluation.

Both quantitative and qualitative data-gathering approaches were used, with the aim of developing insights into the project's strengths and shortfalls as a basis for developing relevant lessons for organizational learning and operational improvement. Data was collected using multiple means:

- Desk review: of key project documentation, including the initial approval request, annual PIRs, Progress Report, project website, studies and presentations, dissemination materials/media reports and other thematic resource materials. See Annex 2;
- Field Visit: with direct observation and interviews in Beijing and Shanghai with government counterparts, project staff in national implementing agencies, companies engaged as demonstration sites for project implementation, and other key stakeholders. The timing of the field visit in Shanghai also allowed for the participation in the annual working meeting-2020 that took place on 8-9 December 2020, which allowed for direct observation of the project's progress (including the sub-projects recruitment process):
- Telephone Interviews: were carried out with project partners (Qingdao Tedian new energy Co., Ltd and New Energy Automobile Industrial Park in Rugao Economic Development Zone) in Rugao and Qingdao (not included in the field visit);

1.4 Limitations

While it would have been ideal to have direct input from all actors involved in implementing and benefiting from this intervention, only a selection of those involved in the project were consulted. These actors were selected with the aim of providing representative perspectives and enabling a balanced assessment of the project's intended outcomes and impacts. In all of the demonstration sites, Shanghai has made good progress, while the other sites are still in the start-up stage. Therefore, while it would have been ideal to visit all of the demonstration sites, given the constraints of time, budget, the Covid-19 and availability of stakeholders, finally only one demonstration site (Shanghai) was visited.

2. Project background

2.1 Brief Country Context

China is a large developing country with a population of 1.4 billion. Its GDP is nearly 100 trillion CNY in 2019 (14.4 trillion USD at the average annual exchange rate), ranking second in the world. And the GDP per capita surpassed 10,000 USD. The year 2020 is the closing year of China's 13th Five-Year Plan. In the past five years, China's economic, scientific and technological strength and comprehensive national power have all leapt to a new height, with generally stable economic operations and a sustained optimization of the economic structure. The income of residents continued to grow, with an average annual real growth rate of 6.5% in per capita disposable income from 2016 to 2019; the middle-income group has expanded from 100 million people in 2010 to more than 400 million in 2019; and the level of urbanization continued to rise, with the urbanization rate reaching 60%. The global economy as a whole is affected by the COVID-19 in 2020, but China's GDP still achieves positive growth as one of the world's major economies, exceeding 100 trillion CNY in 2020.

Regarding the ecology and environment, China has generally improved in terms of air quality, water quality, soil quality, ecological conditions and major pollutants emissions reduction, with the most effective improvement in the air environment. The nine obligatory targets set in the 13th Five-Year Plan in the field of ecological and environmental protection were fully over completed³⁴.

In the 2020 Human Development Report published by UNDP, China's HDI of 2019 is 0.761, ranking 85th out of 189 countries, which is the same as in 2018, reaching a "high level of human development".

Gender equality is a fundamental national policy in China, and China has always attached great importance to and actively promoted the comprehensive development of women and gender equality. In 2017, 340 million women were employed nationwide, accounting for more than 40% of the total, double the number in 1978 at the beginning of reform and opening up; female professionals and technicians accounted for nearly half of the total; the proportion of women among general government staff exceeded 52%, and proportion of leading female officials reached 26.5%. The proportion of women participating in politics has gradually increased, with the proportion of female deputies to the 13th National People's Congress reaching 24.9%, which is 12.9 percentage points higher than the first session in 1954. Also, the proportion of female members of the 13th National Committee of the Chinese People's Political Consultative Conference reached 20.4%, which is 14.3 percentage points higher than the first session in

³ Outline of the 13th Five-Year Plan for Ecological and Environmental Protection, <http://www.mee.gov.cn/gkml/hbb/bwj/201611/W020161102409694045765.pdf>

⁴ 21 October, 2020, State Council Information Office, press conference, Zhao Yingmin, Vice Minister of the Ministry of Ecology and Environment, introducing the 13th Five-Year Plan for Ecological and Environmental Protection <http://www.scio.gov.cn/xwfbh/xwfbh/wqfbh/42311/44005/index.htm>

1949.⁵.

2.2 Sector-Specific Issues of Concern to the Project

In September 2020, Chinese President Xi Jinping delivered a speech via video link at the annual General Debate of the 75th session of the United Nations General Assembly, solemnly announced the medium and long-term goals and vision of China's carbon peak and carbon neutrality, pledging that China will scale up its intended nationally determined contributions by adopting more vigorous policies and measures, strive to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060⁶. In December, President Xi Jinping announced further commitments at Climate Ambition Summit that by 2030, China will lower its CO₂ emissions per unit of GDP by over 65% from the 2005 level, increase the share of non-fossil fuels in primary energy consumption to around 25%, increase the forest stock by 6 billion m³ from the 2005 level, and bring its total installed capacity of wind and solar power to over 1.2 billion KWh⁷. Chinese government has included "a steady reduction in carbon emissions after reaching the peak" in its vision for 2035, and required the development of an action plan. In 2020 Central Economic Work Conference, "promoting work in achieving carbon peaking and carbon neutrality goals" were also listed as one of the key tasks for 2021⁸. All these show that the Chinese government has attached unprecedented importance to climate change, and China has entered a new stage of development in its efforts to address climate change.

In recent years, China has made positive progress in addressing climate change. In 2018, the government function of addressing climate change was adjusted from the NDRC to the MEE, providing an institutional mechanism guarantee to achieve synergy between addressing climate change and environmental pollution management. During the 13th Five-Year Plan period, China's CO₂ emissions per unit of GDP continued to decline. By the end of 2019, CO₂ emissions per unit of GDP had fallen by a cumulative 18.2%, and carbon emission intensity was 48.1% lower than in 2005, ahead of China's commitment to the international community to reduce it by 45% by 2020⁹.

In terms of energy consumption, energy consumption per unit of GDP fell by a cumulative 24.4% in 2019 compared to 2012, equivalent to a reduction in energy consumption of 1.27 billion tons of standard coal. With an average annual growth of 8% in energy consumption supporting an average annual growth of 7% in the national economy, the share of non-fossil energy in energy

⁵ Equality, Development and Sharing: Progress of Women's Cause in 70 Years Since New China's Founding. <http://download.people.com.cn/waiwen/eight15689433801.pdf>

⁶ President Xi Jinping's speech at the Climate Ambition Summit (full text). http://www.xinhuanet.com/politics/leaders/2020-12/12/c_1126853600.htm

⁷ Propose China's plan for global climate governance after 2020. http://www.gov.cn/xinwen/2020-12/16/content_5569702.htm

⁸ Xi Jinping delivered an important speech at the Central Economic Work Conference: Accelerate the construction of a national carbon trading market, and do a good job in carbon peaking and carbon neutrality. <http://www.tanpaifang.com/tanjiaoyi/2020/1218/75907.html>

⁹ October 21, 2020, State Council Information Office, press conference, Zhao Yingmin, Vice Minister of the Ministry of Ecology and Environment, introducing the 13th Five-Year Plan for Ecological and Environmental Protection <http://www.scio.gov.cn/xwfbh/xwfbh/wqfbh/42311/44005/index.htm>

consumption reached 15.3%, ahead of the 2020 target that China has committed to the international community. Since the start of 13th Five-Year Plan, China's RE installations have grown at an average annual rate of about 12%, with new installations accounting for more than 50% of the total annual capacity. By the end of 2019, China's total installed capacity of RE generation was 790 million KWh, accounting for about 30% of the world's total installed capacity of RE generation. Hydropower, wind power, solar power and biomass power generation all rank first in the world in terms of installed capacity, becoming an important component of the energy transition and the mainstay of future electricity growth. Among them, new energy sources such as wind power and solar power are developing rapidly, with the total installed capacity of wind power and solar power reaching 414 million kilowatts, becoming the main source of RE development^{9 10}.

China's new energy vehicle industry has made great achievements, and China has become one of the most important forces in the transformation of the world's automotive industry. China's new energy vehicle production, sales and ownership have ranked first in the world for five consecutive years since 2015, with new additions and ownership reaching 1.2 million and 3.8 million units respectively in 2019, both accounting for more than half of the global total. China's new energy vehicle sales having exceeded 3.92 million units in 2020. By the end of 2019, the country's EV charging infrastructure reached 1.2 million, which have built the world's largest charging network and effectively contributed to energy efficiency in the transport sector and the optimization of the energy consumption structure¹⁰.

In November 2020, the Chinese government released "New Energy Vehicle Industry Development Plan (2021-2035)"¹¹, pointing out that the development of new energy vehicles is a necessary path for China to move from being a large automotive country to a strong automotive country, and is a strategy to address climate change and promote green development. The plan clearly requires that the development direction of electrification, networking and intelligence should be adhered to, the deep integration of new energy vehicles with energy, transportation and communication should be promoted, and the main strategy of the new energy vehicle industry should be changed from "pure electric drive" as the technical route of new energy vehicles to intelligent vehicles, hydrogen fuel cell vehicles and integration with the energy and transportation industries. The plan has also put forward the development targets for the new energy vehicle industry, that by 2025, the average electricity consumption of new EVs falls to 12.0 kWh/100 km and new energy vehicle sales reaches around 20% of total new vehicle sales. By 2035, EVs will be the mainstream of new vehicles, and the vehicles in public sector will be fully electrified. Finally, the plan emphasizes the need to promote the integration of new energy vehicles and energy sources. For example, strengthening the energy interaction between new energy vehicles and the power grid (V2G), to give full play to the advantages of distributed energy storage for new energy vehicles, to reduce the electricity cost for new energy vehicles,

¹⁰ Energy in China's New Era, http://english.scio.gov.cn/whitepapers/2020-12/21/content_77035604.htm

¹¹ http://www.gov.cn/zhengce/content/2020-11/02/content_5556716.htm

and to improve the response capability of the power grid in terms of peak and frequency modulation and security emergencies. Secondly, promoting the efficient synergy between new energy vehicles and RE, including coordinating the energy utilization of new energy vehicles with wind power generation and PV power generation, enhancing the proportion of RE applications, and encouraging the construction of multifunctional integrated stations for "PV storage, charging and discharging" (distributed PV generation - energy storage - charging and discharging).

Although China's RE industry has been greatly developed, due to the lack of power grid coordination capacity, limited system peaking shaving capacity, inter-provincial barriers to block the power consumption and other reasons, China's hydropower, wind power, PV power generation and other RE abandonment are still relatively serious. According to the National Energy Administration, the national hydropower generation was 902.5 KWh in the first three quarters of 2020, and the abandoned power in major river basins was about 24.2 billion KWh, thus the utilization rate of hydropower was about 96.4%; the national wind power generation was 331.7 billion KWh, and the abandoned power was about 11.6 billion KWh, thus the average abandoned rate was 3.4%; the national PV power generation was 2005 billion KWh, and the abandoned power was about 3.43 billion KWh, with an average abandonment rate of 1.7%¹².

As important energy storage equipment, the development of EVs and battery technology is seen as key to driving the further development of RE. Assuming that all 300 million passenger cars in China are converted to EVs, with an average battery capacity of 65 KWh per vehicle, the capacity of on-board energy storage could reach approximately 20 billion KWh. This means that these 300 million EVs could store as much electricity as the total amount of electricity consumed in China one day¹³.

2.3 Project summary

2.3.1 Fact sheet of the project

The project "Integrated Adoption of New Energy Vehicles in China" aims to facilitate and scale-up of the integrated development of electric vehicles (EVs) with renewable energy (RE) in China, which is structured into five components.

The five components and its expected outcomes is listed below:

Table 1: Planned Components and Envisaged Outcomes

No.	Component Description	Expected Outcome
1	Policies and Programs	Drafted and recommended policies, technical standards, and guidelines that provide regulatory and planning elements, leading to the higher adoption of EV-RE integration schemes

¹² Transcript of NEA's Q4 2020 online press conference, 30 October 2020 http://www.nea.gov.cn/2020-10/30/c_139478872.htm

¹³ January 2021, Innovation and Development of New Energy Vehicles Towards Carbon Neutrality, Academician Ouyang Minggao. https://www.sohu.com/a/445169135_775757

		by city governments, vehicle manufacturers, and consumers, thus resulting in GHG emission reductions
2	Government Institutional Capacity Building	Increased institutional capabilities and awareness of policymakers at national and local levels on the use of integrated EV - SG(Smart Grid) – RE systems
3	Piloting of Technical Measures and Commercialization Approaches (Project Demos)	Two city-scale projects piloted, demonstrating the integration of EVs and RE, as well as other foundational work needed to achieve large-scale EV-RE integration
4	Awareness Raising and Dissemination amongst Manufacturers, Suppliers, and Consumers	Increased knowledge and capacity of business and consumer stakeholders, facilitating awareness, research and development, manufacture, operation, and maintenance with regard to EV-RE integration
5	Monitoring and Evaluation (M&E)	A robust mechanism for M&E in place to ensure the attainment of project outcomes

The donors of this project are GEF agency, recipient government and private sector, which include UNIDO, Yancheng Municipal State-Owned Asset Investment Group, Society for Automotive Engineers (SAE) China, Shanghai International Automobile City Company, Yancheng Oriental Investment and Development Group.

Key Stakeholders of this project include Ministry of Industry and Information Technologies (MIIT), UNIDO, Ministry of Finance (MOF), China Society for Automotive Engineers (SAE), National Development and Reform Commission (NDRC), National Energy Administration (NEA), Ministry of Science and Technology (MOST), Yancheng Municipal Government Economic and Technological Development Zone Management Agency, Shanghai International Automobile City (SIAC), Various city-level governments whose cities are among the 88 included in China's EV demonstration program and so on. The NDRC, NEA and MOST were less involved in the actual implementation of the project.

The project was submitted at March 21th, 2017 and duration of this project is 36 months. As the contract signing process takes a long time, its actual start up time was August 2018, and the end time is expected to be extended to March 2022.

Project costs and co-financing is listed below:

Table 2: Planned Financing Inputs by Source

Source of Support	Total (USD)
GEFTF	8,930,000
Co-financing	117,000,000
Total	125,930,000

2.3.2 Brief description including history and previous cooperation

The project “Integrated Adoption of New Energy Vehicles in China” was originally designed to reduce the large and growing GHG emissions from China’s transport sector, which was specifically looking at growing fleet of electric vehicles (EVs) in China.

The barriers lied in (1) policy barriers, (2) barriers with regard to the capacity and knowledge of government officials, (3) technology and market barriers, and (4) barriers with regard to the awareness and knowledge of the general public and the commercial and industrial sectors.

However, China had little if any experience with the integration of EV with RE at the beginning of this project. The design team analyzed the relevant literature and found that studies indicated that EV adoption would be counterproductive for GHG mitigation if powered by electricity that was mainly coal fired. Neither the academic nor intergovernmental studies reviewed make the linkage between the need to incentivize higher supply of renewable energy to power electric vehicles, nor policies to integrate NEVs and RE in China.

Also, integration of EV and RE was lack of new specific standards and relevant work were undertook under the project, such as energy management centers (for large-scale EV-RE integration via load management), including standards and specifications for communication protocols among the grid, the charger, and the EV; (2) smart charging systems, including technical and safety aspects; (3) V2G systems; (4) use of retired EV batteries (including standards for categorizing retired EV batteries, standards for safety, measuring and testing of retired EV batteries, and standards to determine when EV batteries should be retired from EV use); (5) mobile charging station systems; (6) safety and technical standards, especially with regard to fire protection system, for distributed RE systems that serve as charging systems for EVs.

Efforts were also made to share the knowledge gained in this China EV-RE integration project with other countries and in which way dissemination of results made an important contribution to the global community. As one key avenue of dissemination, UNIDO, as a member of the Partnership on Sustainable, Low Carbon Transport (SLoCaT), aimed to transfer the lessons learned on policies and technologies to other stakeholders.

2.3.3 Project implementation arrangements

UNIDO is entrusted by the Government of China and by the GEF with the mandate to implement the project to achieve its objective, its outcomes and outputs and within its budget and time frame as approved in this project document and maintain the oversight on the project implementation, including supervision of the execution of key activities, as well as organize planned evaluations.

Overall responsibility for project execution lies with the MIIT. The SAE-China, and the City Governments of Yancheng and Shanghai have specific responsibility at national level for executing activities within the current UNIDO/GEF project.

Coordination among Government agencies and the implementing agency is achieved through

a PSC which chaired by MIIT and UNIDO. The PSC provides necessary guidance and oversight on the project's execution and invite members and experts for specific meetings, as needed. The PSC meetings is held once every year.

UNIDO's role in the PSC is to provide supervision and technical support. The UNIDO Project Manager (PM) is to facilitate the work of the PMO in co-ordination and networking with other related initiatives and institutions in the country.

The PMO or a relevant government financial institution maintain an accounting and financial transaction reporting mechanism for the project, and report to the MOF and to the PSC.

However, due to personnel changes in pilot city project, demonstration in Yancheng has lagged behind, and Qingdao is subsequently determined as an alternative, except for the activity of the RE micro-grids demonstration using wind power. Meanwhile, the contract signing of Qingdao demonstration is undertaken.

A set of execution agreements is subscribed between UNIDO, MIIT and the designated execution agencies at local level during the inception phase. The roles and responsibilities of the stakeholders involved in the project are depicted in the following figure:

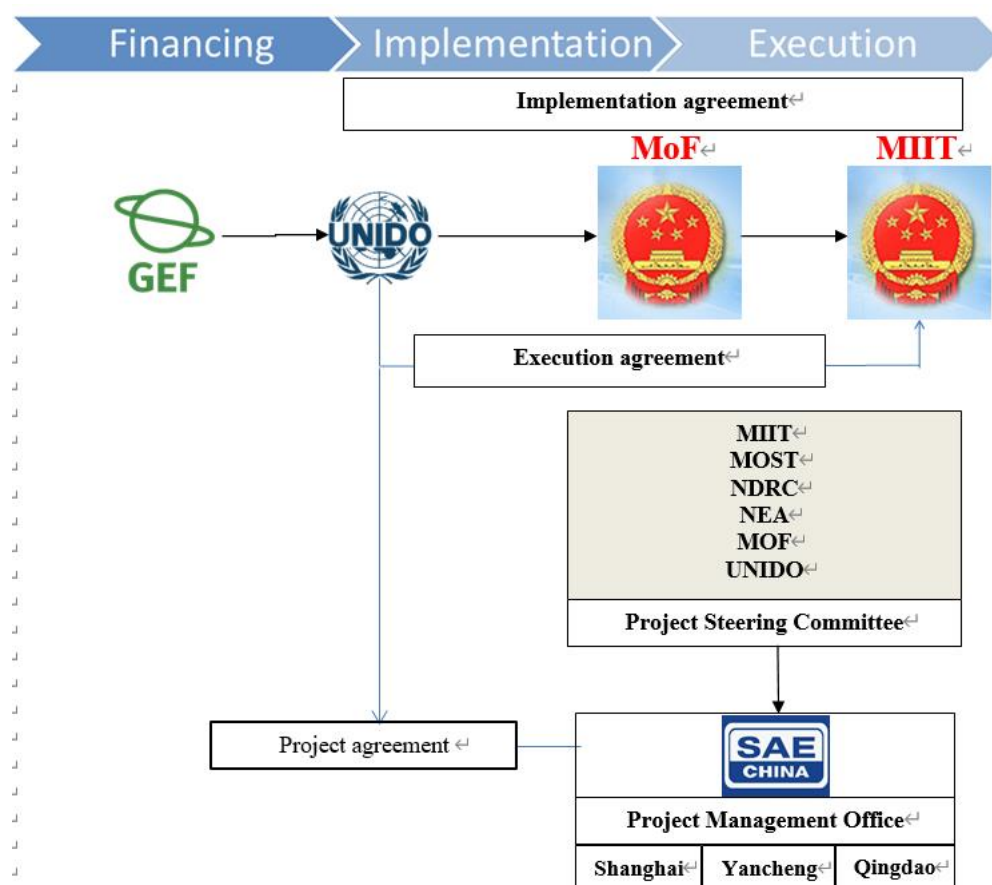


Figure 1: Institutional and Project Management Arrangements

2.3.4 Positioning of the UNIDO project

UNIDO has established four offices in China, including Centre for South-South Industrial Cooperation, UNIDO Field Office, UNIDO Investment and Technology Promotion Office in Beijing, UNIDO Investment and Technology Promotion Office in Shanghai.

Investment and Technology Promotion Office (ITPO) in China was established in 1990. Its mandate is to facilitate active, rational and effective utilization of direct investment; support the implementation of China's "outward investment" strategy; support capacity building and competitiveness of China's organizations, institutions and enterprises; promote technology innovation and market access.

There are 21 ongoing UNIDO projects in China, with total budget of 121,609,496 USD, to align with eight Sustainable Development Goals (SDGs) including Climate Action, Responsible Consumption and Production, Sustainable Cities and Communities, Industry, Innovation and Infrastructure, Affordable and Clean Energy, Good Health and Well-being, Zero Hunger and No Poverty.

This UNIDO project "Integrated Adoption of New Energy Vehicles in China" is highly consistent with China's national priorities as well as its commitments under the United Nations Framework Convention on Climate Change. This project combines China's top priorities in a new way via the field of EV-RE integration, thus introducing a new approach for China to achieve its targets and commitments at a level beyond that possible by pursuing EVs and RE in an unintegrated fashion.

2.3.5 Counterpart organization(s)

Project stakeholders include national-level government organizations (MIIT, MOF), project pilot coordinating agencies (Yancheng Municipal Government's Economic and Technological Development Zone Management Agency and Shanghai International Auto City), various city-level governments whose cities are among the 88 included in China's EV demonstration program, technical experts, manufacturing companies (particularly manufacturers of vehicles, manufacturers of charging equipment, and manufacturers of renewable energy equipment), service providers (including car sharing companies, operators of charging stations, and engineering firms that set up RE mini-grids), users or potential users of EVs not already mentioned (such as taxi companies, bus companies, delivery companies, and consumers), the general public, civil society organizations (including engineering societies, industrial associations, EV user organizations, and women's organizations), and the media. Key stakeholders are listed in below, where their engagement in preparation and implementation of the project is also briefly described. During the implementation of the project, some of the pilot demonstration work undertaker by Yancheng Municipal Government Economic and Technological Development Zone Management Agency has been transferred to Qingdao Telaidian New Energy Co., Ltd, except for the RE micro-grids demonstration using wind power.

Table 3: Key Stakeholders and Their Engagement in Preparation and Implementation of the Project

Stakeholders	Engagement in Preparation and Implementation of the Project
Ministry of Industry and Information Technologies (MIIT)	As executing agency for the project, MIIT is responsible for overseeing project management, including coordination with partners, procurement, recruitment, administration, and reporting. In particular, MIIT oversees the work of SAE, which it entrusts with day to day activities of the project. As the Chinese Ministry responsible for industrial development, MIIT is also closely involved in the project's relevant policy initiatives in EV-RE integration, including the EV-RE integration national roadmap, national level policies, and industry standards. Its staff takes part in capacity building for national-level officials on EV-RE integration. MIIT is also an important target of project activities aimed at developing a cross-agency coordination mechanism for EV-RE integration in China.
UNIDO	As GEF implementing agency for the project, UNIDO is responsible for the project design and preparation, and carries out supervision, monitoring, and evaluation functions. Based on consultations with the main project partners, UNIDO also provides specific execution support during the main project phase. The national execution modalities is reflected in the project implementation agreement with MOF and an execution agreement to be concluded with MIIT.
Ministry of Finance (MOF)	As focal point for the GEF in China, MOF has responsibility to oversee the GEF national portfolio. MoF has also passed specific guidance for GEF projects administration, which required all projects to be nationally executed. In addition, in its capacity as a the regulatory agency for financial incentives and subsidies, MOF is technically involved in review of EV-RE integration incentive policies and the national EV-RE integration roadmap drafted under the project. Relevant staff from MOF also participate in capacity building in EV-RE integration as carried out under the project for national-level policy makers.
China Society for Automotive Engineers (SAE-China)	As the organization entrusted by MIIT to handle day-to-day operation of the project, SAE is involved in ensuring coordination of national counterparts, and carrying out designated project activities. SAE hosts the PMO (project management office) that conduct execution, including recruiting consultants and sub-contractors, keeping track of their progress, elaborating technical and financial progress reports.
Yancheng Municipal Government Economic and Technological Development Zone Management Agency	Yancheng's Economic and Technological Development Zone Management Agency has played the leading role in designing the project demo in Yancheng during the PPG phase. In this role, the Agency has brought on various partners from industry to implement the project. During execution, the Agency withdrew from the project.
Shanghai International Automobile City	SIAC has played the leading role in designing the project demo in Shanghai during the PPG phase. In this role, it has marshalled its extensive internal resources, including its software company and its EV

(SIAC)	monitoring center, to be a part of efforts during execution. SIAC involves its car sharing business in the project demo and scale up the number of vehicles and charging posts available as a part of the demo.
Qingdao Telaidian New Energy Co., Ltd	After the project started, it took over the tasks related to the Yancheng pilot (smart charging, V2G, energy management center, etc.) and was responsible for carrying out the pilot demonstration in the Qingdao demonstration park.
New Energy Automobile Industrial Park in Rugao Economic Development Zone	After the project started, it undertook some of the city promotion tasks and was responsible for regional policy development and other related projects to promote the demonstration and dissemination of project results.

3. Evaluation findings

3.1 Project Design Assessment

3.1.1 Project design

Finding 1: The project design is seen as sound and appropriate, technically feasible and able to address the problems at hand. The project's financial, institutional and implementation arrangements are reasonable and make the best use of limited resources. The M&E plan has been established. However, the failure to adequately assess the risks during the project design phase led to a delay in the implementation of the Yancheng demo.

A number of activities including policies and programs research, government institutional capacity building, piloting of technical measures and commercialization approaches, awareness raising and dissemination, etc. were designed in the IANEV project, which could effectively solve the current barriers (including policy barriers, barriers with regard to the capacity and knowledge of government officials, technology and market barriers, and barriers with regard to the awareness and knowledge of the general public and the commercial and industrial sectors) related to the development of the EV-RE integration.

Informants indicated that the project design has been studied, discussed and modified by UNIDO and experts in related fields many times, and the activities were considered to be effective in solving the present obstacles. From the timeline, UNIDO put forward preliminary ideas in 2015 and began to contact with MIIT, and the implementation plan was confirmed and the contract was signed in 2017, while the project was officially launched in 2018. According to the project implementation effect, the funding, institutional and implementation arrangements of the final plan formed are valid and reasonable. The project design makes full use of limited resources, and is technically feasible, which is able to address the problems at hand.

The project endorsement shows that a M&E plan was established, and 320,000 USD was allocated to related activities. UNIDO is responsible for the implementation of the plan. The

risk assessment was carried out during project design, but the risk was underestimated. The pilot city's interest in the demonstration project was overestimated. For the key task in the project, such as Yancheng demo, it is recommended to select a backup during project design. And the frequency of communication with partners should be increased to get important information in time. On the other hand, risk assessment should be emphasized.

However, thanks to the effective management of the project, the problem has been solved. In the second year of project implementation, SAE-China tried to contact with other cities, and finally the city Qingdao was chosen as an alternative plan.

3.1.2 Project results framework/logframe

Finding 2: The project's result-chain is clear and logical. It provides good support for activities development, sub-contracting and M&E.

The results framework elaborates the project design's five components in a logical sequence that is mutually reinforcing and was the basis for subsequently developing work plans, organizing the subcontracting, and elaborating the M&E system. The project's results framework contains immense detail. Baselines are indicated. Indicators for outputs with specific targets are formulated in a SMART¹⁴ manner, together with their means of verification. Assumptions and risks are also mentioned at output level, which represents current best practice.

The KPI indicators designed can basically reflect the project results, and fully considered the participation of women (the proportion of female participation is used as the evaluation indicator for many activities). However, too many conferences and trainings are designed, while some of them can be combined, which makes the summary and arrangement of KPI indicators complicated. Besides, many KPI indicators use quantitative indicators such as the number of participants and the proportion of women, but lack of qualitative indicators (e.g., the level of participants: president/minister/department director).

On the whole, most of the designed KPI indicators are easy to obtain, and do not spend much time and cost. Since the indicator carbon emission reduction is difficult to obtain directly, the estimation method based on renewable energy (RE) power generation and the increase in electric vehicles (EV) is used. The method is reasonable, but the indicator is difficult to be followed regularly. Because obtaining data from various sub-contractors requires a lot of time.

3.2 Project Performance and Progress Towards Expected Results

3.2.1 Relevance

Finding 3: The project is highly relevant for national development priorities, the intended beneficiaries, and implementing partners. It is fully pertinent to UNIDO's mandate and domains of comparative advantage and fully aligned with the donor's focal area priorities with

¹⁴ Specific, Measurable, Assignable, Relevant, Time-Specific

respect to climate change mitigation.

The project's objective is fully consistent with global development needs and is well-aligned with the 2015 Paris Climate Agreement, 2030 Development Agenda, and Sustainable Development Goals (SDGs), which instantiate the world's commitment to safeguarding the global commons.

The project is highly relevant to the development priorities of China, and is highly forward-looking. Firstly, the ultimate goal of this project is to reduce carbon emissions, especially in the transportation sector, in order to cope with climate change, which is highly consistent with China's carbon emission target, and energy development plan¹⁵. Secondly, through the use of RE and the development of EV, this project can significantly reduce the mining and utilization of fossil energy such as coal and petroleum, which is conducive to pollution reduction and is consistent with China's ecological civilization construction strategy and ecological environmental protection plan. Thirdly, the project aims to promote the integration of China's EV-RE through policy formulation, institutional capacity building, pilot demonstrations, and public awareness enhancement. This is in line with the recently proposed "New Energy Vehicle Industry Development Plan (2021-2035)"¹⁶, especially the contents of strengthening new energy vehicles and power grids (V2G) energy interaction, and promoting efficient synergy between new energy vehicles and renewable energy.

The project's target group includes policy makers, industry players regarding EV-RE integration, car sharing companies, general public, etc., which is relevant to the project target. The deep participation of **policy makers** is quite important to the transformation of project outputs into national or local policies, which can greatly promote EV-RE integration in China. An informant remarked, "many policies and plans issued by MIIT have incorporated the outputs of this project, and some of the technical standards formed in the project have been released". On the other hand, through multiple publicity and training sessions, the national and local policy makers' understanding of EV-RE has been greatly promoted, which could further promote the application of project results; Automobile manufacturers, charging facility suppliers, power industry and other **industry departments** actively participate in the project work, especially in the demonstrations. For example, Shanghai NIO has established PV power generation facilities for battery charging, and has built multiple V2G charging piles, which conducts smart charging and discharging demonstrations. Some other companies have established PV storage charging micro-grids. According to the informants, after participating in this project, the corporate visibility has been greatly improved; Companies such as **electric car sharing** (EVCARD) and **electric bus rental** (E-Drive) also actively participate in the demonstrations, exploring the business model of EV-RE integration, and trying to apply the project outputs to the general public; Through the use of related services, as well as browsing relative website and articles,

¹⁵ President Xi Jinping's speech at the Climate Ambition Summit (full text). http://www.xinhuanet.com/politics/leaders/2020-12/12/c_1126853600.htm

¹⁶ http://www.gov.cn/zhengce/content/2020-11/02/content_5556716.htm

the awareness of EV-RE integration of the **general public** has been greatly increased.

The project is of high relevance to national implementing partners. **SAE-China** is a key policy advisory and auto industry think tank in China. With a history of more than 50 years, it has undertaken many projects related to the development of China's automobile industry, as well as standard formulation, and has carried out extensive cooperation with domestic EV companies. SAE-China has a lot of experience in organizing large-scale domestic and international exchange conferences. During the implementation of this project, it has held multiple forums with high international influence. **MIIT**, as the industry authority of China, has been committed to the development of the new energy automobile industry and has issued a number of policies and standards. In the project, MIIT has integrated the project results into the national policy formulation, which played an important role in the sustainability of the project.

For UNIDO, the project was highly relevant to its mandate to pursue inclusive and sustainable industrial development. The agency's 20+ years of experience in assisting industry in both developing countries and emerging economies through policy-making technical assistance, institutional capacity-building, resource-efficient and low-carbon/energy efficient industrial production, and support for market transformation could all be leveraged under the project framework. The project promotes the formulation of EV-RE integration policies, launches demonstration of key technologies, strengthens institutional capacity building, and promotes public awareness, which could help promote the expansion of the EV and RE industries, promote the improvement of energy utilization efficiency, and promote the sustainable development of the EV and RE industries.

The project is proposed under the GEF climate change mitigation ("CCM") focal area. The relevant focal area strategy is CCM-2, Program 3, "promote integrated, low-carbon systems" according to GEF 6 Programming Directions, "targets urban interventions with significant climate change mitigation potential, to help cities shift towards low-carbon urban development." The project is a strong fit for this focal area strategy, as it integrates two key aspects of urban energy use, transport and electric power. And, it enables the integration of RE into both at a much larger scale than seen to date. While including national level policy work, the project also puts strong emphasis on capacity building for city-level officials and on the design of city-level plans for EV-RE integration. The focal area outcome associated with this program that the project targets are: "B. Policy, planning, and regulatory frameworks foster accelerated low GHG development and emissions mitigation."

3.2.2 Effectiveness and Progress Towards Expected Results

Finding 4: Most of the activities went smoothly as planned, and achieved the expected results, especially Shanghai demo. However, the activities of Yancheng demo are stagnant. The project implementation should be speeded up in the future, especially the Qingdao demo, so as to ensure that the subsequent activities related to the dissemination of the pilot experience can be carried out on schedule.

The assessment of the project's effectiveness was undertaken by reviewing the status and achievements of programmed outputs as reported by SAE-China during November 2020 to January 2021 (primarily based on annual PIR and biannual reports compiled until Dec 2020), complemented and updated by data gathered through the interviews and survey carried out for the MTR. These outputs drive the related outcomes, which overall have been designed to support the intervention in pursuing its main objective.

Component 1, under the responsibility of SAE-China, focuses on developing policy recommendations, technical standards, and plans at the national and local levels to promote the integration of EV-RE in China. Several subtasks were subcontracted to other companies or organizations. SAE-China's recent reporting conveys a general impression that its targets will be met. Above 50% of the tasks seem to have been completed by December 2020 according to MTR interviews. Table 4 provides the current status and achievements. The unfinished tasks have been subcontracted to State Grid, China Automotive Technology & Research Center, Shanghai Fire Research Institute of MEM and Energy Research Institute of the National Development and Reform Commission of China.

Some achievements in this component have supported the formulation of relevant national policy and plans, such like "New Energy Automobile Industry Development Plan (2012-2035)" (Figure 2) issued by the General Office of the State Council on November 2, 2020. Some contents as strengthening the energy interaction between new energy vehicles and the power grid (V2G), and promoting efficient synergy between new energy vehicles and renewable energy, etc., were resulted from this project. In addition, the output has effectively supported the MOST's "National Science and Technology Development Plan for 2035" (transportation), as well as the policy formulation and revision work of Shanghai Development and Reform Commission.



Figure 2: Notice of the General Office of the State Council on Issuing the New Energy Automobile Industry Development Plan (2021-2035)

The holding of seminars and exchange meetings can effectively integrate the opinions of

experts in related fields, thus improve the quality of outputs, and also can promote the publicity and promotion of project outputs. In this component, about 14 seminars were held. Among them, 3 seminars were relevant to the echelon utilization of retired power batteries and residual value assessment of new energy vehicles (January 2019, April 2019, May 2019), 2 seminars were relevant to the promotion of EV-RE integration policy (July 2019, November, 2019), and 2 seminars were relevant to the recycling and utilization of power batteries (December 2019, May 2020). Some of these meetings were held online due to the impact of COVID-19.



Figure 3: Several meetings and forums held in Component 1

Activity 1.4 “City-level RE-EV integration and scale up plans, including replication plans for the adoption of best models demonstrated in Shanghai and Yancheng” needs to be carried out after the completion of demonstrations in Shanghai, Yancheng and Qingdao (some activities in Yancheng are transferred to Qingdao). Therefore, if Component 3 of the project cannot be carried out on time, this activity will be delayed.

Table 4: Summary of Project's Success in Producing Component 1 Outputs related to Outcome 1

Outcome 1: Drafted and recommended policies, technical standards, and guidelines that provide regulatory and planning elements, leading to the higher adoption of EV-RE integration schemes by city governments, vehicle manufacturers, and consumers, thus resulting in GHG emission reductions		
Output	Indicators	Status and Achievements as at 20 October 2020
1.1 Recommended national-level policy instruments for the integration of electric vehicles (EVs) with RE available to government	Policy package formulated Recommended policy package on RE/EV integration, regulations and incentives for charging and battery retirement and balancing of grid	National roadmap completed, agreed upon and published The proposed policies or amendments submitted to government on the following topics: <ul style="list-style-type: none"> Load balancing and Smart charging guidelines Ongoing work on

agencies for their consideration	developed and discussed relevant authorities	<ul style="list-style-type: none"> energy management center set-up V2G power sales to grid V2G incentives guidelines for distributed EV-RE charging systems, incentives for distributed EV-RE charging systems, incentives for grid-based EV smart charging using RE guidelines for use of retired EV batteries and incentives for use of retired batteries
1.1A: National level roadmap to facilitate effective EV-RE integration and scale up that attains consensus among stakeholders	3 key ministries providing input to <i>National Roadmap on EV-RE Integration</i>	<p>Completed</p> <p>National roadmap has been completed, agreed upon and published. (undertaken by China-SAE)</p> <p>Completion time: 30 April 2020</p>
1.1B: Suggested policies and framework that promote balancing of grid load with power generated via utilization of EVs, thus providing a foundation for scale up of EV-RE integration	4 different key topics covered by proposed policies or amendments submitted to government related to EVs' role in balancing power load with power supply (key topics for which coverage is to be assessed include: smart charging guidelines and incentives, energy management center set-up, V2G power sales to grid, and V2G incentives)	<p>Ongoing</p> <p>Activity 1.1B.1: "Conducting of relevant research and analysis on load balancing and potential smart charging related regulations, including a review of domestic and international experience. Design of policy guidelines and incentives regarding EV smart charging and EV smart charging infrastructure." has been completed. The policies or amendments on "Load balancing and Smart charging guidelines" have been submitted to government. 2 research reports "Technical guidelines on orderly charging of electric vehicles and participation in demand management" and "Research on strategy of orderly charging and demand side mechanism" have been formed. (undertaken by Shanghai Electrical Apparatus Research Institute Co., Ltd.)</p> <p>Completion time: October 2019</p> <p>Activity 1.1B.2-B.5: Ongoing. Undertaken by State Grid Corporation of China (State Grid) Project has been initiated and approved in 22 October 2020. Estimated completion time: October 2021</p>
1.1C: Proposed national-level policies to regulate and incentivize systems for the charging of EVs with RE, including those integrating either RE micro-grids or grid-based large-scale RE installations	3 different key topics covered by proposed policies submitted to government related to EVs being charged with RE (key topics for which coverage is to be assessed include: guidelines for distributed EV-RE	<p>Ongoing.</p> <p>Undertaken by the Energy Research Institute (ERI) of the National Development and Reform Commission (NDRC) of China Project has been initiated and approved in 23 October 2020. Estimated completion time: August 2021</p>

	charging systems, incentives for distributed EV-RE charging systems, and incentives for grid-based EV smart charging using RE that would otherwise be curtailed)	
1.1D: Proposed national-level policy instruments to regulate and incentivize use of retired EV batteries, which may play a key role in large-scale EV-RE integration	2 different key topics covered by proposed policies submitted to government related to use of secondary use of retired EV batteries (key topics for which coverage is to be assessed include: guidelines for use of retired EV batteries and incentives for use of retired batteries)	Completed National policy "Administrative Measures for Echelon Utilization of Power Batteries for New Energy Vehicles (Draft for Solicitation of Comments)" has been completed, submitted to the Ministry of Industry and Information Technology (MIIT). Policy report "Research on Residual Value Evaluation System for Echelon Utilization of Retired Power Batteries of New Energy Vehicles" formed, related model tools have been formed, covering data information of 120 vehicles. (undertaken by Data Resource Center, China Automotive Technology & Research Center Co., Ltd. CATARC) Completion time: September 2019
1.2: Issuance of technical standards and specifications facilitating EV-RE integration and scale up, including those for smart charging systems, vehicle to grid (V2G) systems, mobile charging systems, and use of retired EV batteries	6 different types of standards proposed by expert standards formulation committees to facilitate EV-RE integration and scale-up (types to be selected from the following: energy management center standards, technical standards for V2G connection, standards for secondary use of retired EV batteries, technical and safety standards for smart charging systems, standards for mobile charging systems, and standards for distributed RE systems for charging EVs)	Ongoing Activity 1.2.1: Completed, two seminars on power battery recycling standards were carried out on 19 December 2019 (in Tianjin city) and 15 May 2020 (online). Activity 1.2.2: The first draft of the standard "Management Center for Electric Vehicle and Grid Integration" has been formed. Activity 1.2.3: Completed. Activity 1.2.4: Proceed as planned. National standard GB/T 27930-2015 "Communication Protocol between Electric Vehicle Non-vehicle Conductive Charger and Battery Management System" (Draft for Solicitation of Comments) has been completed. Industry standards "Two-way interaction between charging and discharging of electric vehicles Part 1 General principles" and "Two-way interaction between charging and discharging of electric vehicles Part 2 Smart charging" (Draft for Solicitation of Comments) have been completed. Activity 1.2.5: Completed, two technical standards "Management Standard for Recycling and Utilization of Vehicle Power Batteries Part 1: Packaging and Transportation Specifications" and

		<p>“Recycling and Utilization of Vehicle Power Batteries-Echelon Utilization Part 2: Disassembly Requirements” have been published on 31 March 2020.</p> <p>Activity 1.2.6: Due to the high cost of mobile charging vehicles that use retired batteries as energy storage systems, this task is cancelled at the project approval meeting for Qingdao demo.</p> <p>Activity 1.2.7: Completed. The emergency plan for mobile charging car has been completed.</p> <p>Activity 1.2.8: Partly completed. Several meetings with individual decision-makers to present results from Activity 1.2.3, Activity 1.2.5 and Activity 1.2.7 have been carried out.</p> <p>Undertaken by State Grid, CATARC and Shanghai Fire Research Institute of MEM (SHFRI)</p> <p>Estimated completion time: August 2021</p>
1.3: Recommendations presented to transport sector authorities for incorporation of incentives for EV charging with RE in transport sector national carbon trading policies, including carbon trading rules for EVs powered by RE, to promote greater adoption of RE in the grids supplying electricity to EVs	Proposal to incorporate charging of EVs with RE into national carbon trading systems submitted to government	<p>Completed</p> <p>Activity 1.3.1: Completed</p> <p>Activity 1.3.2: Completed. Group standard "Evaluation Method of Greenhouse Gas and Air Pollutant Emission in the Life Cycle of Vehicles" and research report “China Automotive Life Cycle Greenhouse Gas and Air Pollutant Emission Evaluation 2018” were completed. “Research Report on China's Automobile Industry Carbon Quota Trading System” was completed during the MTR.</p> <p>Activity 1.3.3: One meeting was held on 3 September 2018 aimed to present the proposed system-research report of Activity 1.3.2.</p> <p>Completion time: January 2021</p>
1.4: City-level RE-EV integration and scale up plans, including replication plans for the adoption of best models demonstrated in Shanghai and Yancheng	6 cities with draft local EV-RE integration and scale up plans	<p>Ongoing</p> <p>SAE-China has signed contract with the institutes in Beijing, Qingdao, Shanxi, Sichuan, etc. (State Grid Electric Vehicle Service Co., Ltd., Great Wall Motor Co., Ltd., Beijing Electric Power Company, China Southern Electric Vehicle Service Co., Ltd., Qingdao Terad Electric Co., Ltd., State Grid Electric Vehicle (Shanxi) Service Co., Ltd., Blue Gu Zhihui (Beijing) Energy Technology Co., Ltd., China Tower Co., Ltd. Tianjin Branch, Tsinghua Sichuan Energy Internet Research Institute) for</p>

		demonstration on V2G in industrial parks, PV-storage-smart charging-checking in public charging stations, smart orderly charging in urban communities, “new energy + electric vehicles” collaborative and interactive smart energy in Shanxi Province, distributed renewable energy utilization, and battery cascade recycling and utilization, etc. Estimated completion time: August 2021
1.5: Proposed institutional plan to establish responsibilities of and coordination among various government organizations for EV-RE integration	3 different ministries reviewing institutional plan	Ongoing MIIT, UNIDO and SAE-China have signed the agreements including responsibilities of different institutes on the promotion of EV-RE integration in this GEF6 project, which is a good beginning for the institutional capacity building of the country. Relevant materials will be submitted to the government in the form of briefings and suggestions. Estimated completion time: October 2021

Component 2, under the responsibility of SAE-China, focuses on increasing the awareness, knowledge base, and capacity of national and local level Chinese government officials in areas related to EV-RE integration. SAE-China’s recent reporting conveys a general impression that its targets will be met, with an estimated 60% completion by December 2020 according to MTR interviews. Table 5 provides the current status and achievement.

SAE-China has organized several seminars and forums as required in the contract. According to the reports on the Internet, some of them have high social influence such as the annual World New Energy Vehicle Conference. This conference was organized by Chinese Association for Science and Technology (CAST), MOST, MIIT the State Administration for Market Regulation (SAMR) and the local government—the People’s Government of Hainan Province. The conference lasted for 3-4 days each year. Government departments and international organizations from more than 10 countries, as well as representatives from more than 100 new energy vehicle companies participated in the conference. During the conference in 2019, Chinese President Xi Jinping sent a congratulatory letter, stating that “with the emergence of a new round of technological revolution and industrial transformation, the new energy automobile industry is entering a new stage of accelerated development, not only injecting strong new momentum into the economic growth of various countries, but also helping reduce greenhouse gas emissions, cope with climate change challenges, and improve the global ecological environment.” Xinhua News Agency, China Government Network and many other official media have reported the conference, showing the high social influence.

The number of participants and female proportion in various meetings are not provided in the

PIR, but the evaluation team have asked SAE-China to provide the data in the MTR. According to the data provided, the total number of participants of all meetings exceeds 3,400, and every meeting has female participants. The female proportion varies from 9% to 40%. About 58 government officials have participated in the forums on international developments in EV-RE integration.

It should be noted that although the goal of the component is to increase institutional capabilities and awareness of policymakers, and the participants in the training section are required to pass test in the results framework, it is found that no training activities and related tests were specifically organized for government officials. The capacity building was mainly realized by holding seminars and meetings. And the participants of most meetings were not limited to government officials, but also included industry departments and the general public.

The implementation of this component has effectively promoted the capacity building of some national ministries (MIIT, MOST, etc.) and local governments (Hainan, Shanghai, etc.) in EV-RE integration, which can be seen from the policies and plans formulated and issued by them. However, it is also found that MEE, NDRC and other ministries have not participated in this project, thus the project outputs have not been included in the policies formulated by these ministries.

Table 5: Summary of Project's Success in Producing Component 2 Outputs related to Outcome 2

Outcome 2: Increased institutional capabilities and awareness of policymakers at national and local levels on the use of integrated EV - SG (Smart Grid) - RE systems		
Output	Indicators	Status and Achievements as at 20 October 2020
2.1: Training program for 100 city-level policy makers on EV-RE integration policies and demonstration experience	80 government officials attending EV-RE integration training program that pass test on mastery of materials given at end of program Proportion of women among training program attendees: 35%	Completed Activity 2.1.1: Completed. Shanghai demo results were evaluated on 28 May 2020 by experts. International practices and experiences concerning to EV and RE was completed in Activity 1.1. "Energy-saving and new energy vehicle roadmap 2.0" was published on 27 October 2020. Plan for the Shanghai demo has been completed and implemented in 2019. Activity 2.1.2: Completed. Two World New Energy Vehicle Conferences were held in Hainan in 2019 and 2020. An Electric Vehicle Demonstration City Forum was held in Guangzhou, and an International Forum on the Integration of EV-RE was held in Shanghai. (1) Number of participants (2019): 1674 Proportion of women: 10% (2) Number of participants (2020): 1053 Proportion of women: 9% (3) Number of participants (Forum): 300 Proportion of women: 27%

		<p>Although the agreed work has been completed, the activity will continue to get a better result.</p> <p>Estimated completion time: 30 August 2021</p>
2.2: Four workshops conducted to validate the EV-RE integration policy and planning framework	<p>4 workshops at which strong consensus is achieved for proposed policy, standards, trading system, or roadmap</p> <p>Proportion of women among training program attendees: 35%</p>	<p>Ongoing</p> <p>Activity 2.2.1: Completed. The work shop concerning to “Energy-saving and new energy vehicle roadmap 2.0”, which included EV-RE integration roadmap, was conducted on 20 August 2020. The policy makers of the Automobile Development Division of the Equipment Industry Division of MIIT participated in the workshop.</p> <p>Activity 2.2.2: Partly completed. Three workshops for policy makers to cover the policy framework developed under Outputs 1.1D has been conducted. The workshop under Outputs 1.1B and 1.1C will be conducted in 2021.</p> <p>(1) Number of participants (Workshop on New Energy Vehicle Power Battery Echelon Utilization Progress 2018): 102 Proportion of women: 22.5%</p> <p>(2) Number of participants (Workshop on New Energy Vehicle Power Battery Recycling Management): 263 Proportion of women: 23.6%</p> <p>(3) Number of participants (Workshop on Residual Value Evaluation System for Echelon Utilization of New Energy Vehicle Retired Power Battery): 22 Proportion of women: 22.7%</p> <p>Activity 2.2.3: Ongoing. SAE-China has undertaken the project of "Carbon Emission Route", which will be completed by October 2021</p> <p>All the activities will be carried out as planned.</p> <p>Estimated completion time: 31 October 2021</p>
2.3: International forums with participants from central government agencies and EV demonstration cities that disseminate international developments in and plans for EV-RE integration	<p>5 country case studies included in report on international developments in EV-RE integration</p> <p>30 distinct Chinese government officials attending one or both of the two forums on international</p>	<p>Ongoing</p> <p>Activity 2.3.1: Completed. The reports on international developments in EV and RE (including Europe, North America, Asia, and China, English version) have been completed and published).</p> <p>Activity 2.3.2: Partly completed. The PMO held an EV-RE integration development forum in Shanghai on 15 September 2020. Experts of UNIDO and Shanghai government officials participated in the forum. The other forum will be carried out in 2021.</p> <p>Number of participants (2020 forum): 50 Proportion of women: 40%</p>

	<p>developments in EV-RE integration</p> <p>Proportion of women among training program attendees: 35%</p>	<p>Government officials: 58</p> <p>All the activities will be carried out as planned.</p> <p>Estimated completion time: 30 August 2021</p>
2.4: Written materials on EV-RE integration strategically disseminated to policy makers	<p>30 government officials that are confirmed to have reviewed briefing materials</p> <p>6 categories of items included in online information base (possible categories include: policy briefings, international study, demo reports, roadmaps, policies/ regulations, standards)</p>	<p>Ongoing</p> <p>Activity 2.4.1 and Activity 2.4.2: Completed.</p> <p>Two technical standards “Management Standard for Recycling and Utilization of Vehicle Power Batteries Part 1: Packaging and Transportation Specifications” and “Recycling and Utilization of Vehicle Power Batteries-Echelon Utilization Part 2: Disassembly Requirements” have been completed and submitted to State Administration for Market Regulation (SAMR) and National Standardization Committee (NSC). The two standards have been published as National Standards.</p> <p>2 research reports “Technical guidelines on orderly charging of electric vehicles and participation in demand management” and “Research on strategy of orderly charging and demand side mechanism” have been completed and adopted by the Shanghai Municipal Government.</p> <p>Activity 2.4.3 and Activity 2.4.4: Proceed as planned.</p> <p>The website for promotion of EV-RE integration has been established. The content of the website needs further improvement. The dissemination plan is under development, such as enriching the content of the website and looking for media organizations to report on the project results. At present, 3 public articles for the project promotion have been published.</p> <p>All the activities will be carried out as planned.</p> <p>Estimated completion time: 30 August 2021</p>

Component 3, under the responsibility of SAE-China, focuses on demonstrating and testing various technical and commercial aspects related to the EV-RE integration. At the beginning, Yancheng of Jiangsu province and Shanghai were selected as the pilot cities, implemented by Yancheng Municipal Government Economic and Technological Development Zone Management Agency (under the lead by Yancheng Bureau of Industry and Information Technology) and SIAC respectively. But after the project officially started, the director of Yancheng Bureau of Industry and Information Technology has been changed, and the pilot tasks were not started yet. The PSC had discussed the changes of demonstration in Yancheng

in August 2019. After approval by MIIT and UNIDO, the pilot tasks in Yancheng were changed to Qingdao of Shandong province, except for the RE micro-grid demonstration using wind power. Some pilot activities will be implemented by Qingdao Telaidian New Energy Co., Ltd. Table 6 provides the current status and achievement.

According to the annual PIR and site visit, the tasks of Shanghai demo are almost completed (estimated 90% completion). The unfinished tasks include the demo of V2G and energy management center, which will be completed in 2021 according to SIAC. Some tasks are completed beyond expectation. For example, 74 smart charging stations and about 821 smart charging poles were constructed, of which 73 stations and 791 poles have been completed before August 2020 (target: 200 smart charging poles, 50 smart charging stations). The number of the electric rental buses reaches 1084, which is five times of the target. The number of public charging piles in Shanghai has reached 57,200 (821 of them is attributable to the project), which is 13.3 times more than the target.

According to the field survey and report from SIAC, many enterprises has been selected to carry out demonstrations through project recruitment. As of August 2020, three batches of 16 projects have been recruited, covering all of Shanghai demo tasks of the project. The demonstrative sites of smart charging are carried out, covering 8 application scenarios: commercial parks, office buildings, shopping complexes, high-speed railway services, airports, hotels, universities, and public parks. According to the data provided by SIAC in the MTR (January 2021), as of December 2020, the installed capacity of 10 PV generation pilots in Shanghai (one more than the data in the summary table as of August) have reached 2.3MWp. During the project period, the PV power generated has reached 5.323 million KWh, and the CO₂ emission reduction is about 5,306.69 tons.

The projects in Shanghai were subsidized after implementation, which guaranteed the projects quality, but also resulted in a lower funding implementation rate. According to the informant, the sub-contractors can only get about 30% of the expected funding support after the project is recruited and reviewed from SIAC. After all the projects completed, the remaining 70% can be obtained. SIAC stated that it will adjust the project appropriation mechanism, add the pre-acceptance step, and allocate the remaining funds after the pre-acceptance of each project.

All of the stakeholders interviewed in Shanghai demo have strongly praised the contributions of SIAC, as well as the expert committees. Several interviewees said that SIAC had very strong organizational capabilities, as well as the ability to integrate resources. A micro-grid demo participant stated that his company applied to join the demo many times, and was unsuccessful at first. But the experts put forward many constructive opinions on his project. In the final batch of project recruitment, after all the requirements were met, his project was successfully recruited. In the implementation stage, the experts also deeply participated, effectively promoted the development of the project. Another interviewee said that the GEF project has a great influence and good publicity effect on enterprises.

As of the site visit in December 2020, Shanghai has established an energy management center. In order to achieve data reception and unified management, specific data collection standards will be formulated for the center to simultaneously interface with the software systems of multiple facility operating enterprises in the next stage.





Figure 4: Site visit of Shanghai demo



Figure 5: Interviews in Shanghai demo





Figure 6: The energy management center of Shanghai demo

Some of the Yancheng demo tasks will be transferred to Qingdao, except for the RE micro-grid demonstration using wind power. The informant said that during the project design, Yancheng Bureau of Industry and Information Technology, the lead implementation department for Yancheng demo had a very strong willingness to participate in the project, and Yancheng has a good foundation for wind power facilities, so it was chosen as one of the demo cities. However, due to the frequent changes in leadership and the enthusiasm reduction of the bureau, the demo tasks were not started. Therefore, the PSC decided to transfer some of the demo activities to Qingdao, which was approved by UNDIO and MIIT. At present, Qingdao Telaidian New Energy Co., Ltd has signed a contract as the executor of the new pilot task with SAE-China, and the tasks will be implemented as soon as possible.

Regarding the demo tasks of mobile charging, SAE-China said that some experts believe the mobile charging market would shrink due to the high cost and the rapid increase of fixed charging piles in China. In the later period, SAE-China will organize further research, and adjust the tasks if the value of promoting mobile charging is little.

Table 6: Summary of Project's Success in Producing Component 3 Outputs related to Outcome 3

Outcome 3: Two city-scale projects piloted, demonstrating the integration of EVs and RE, as well as other foundational work needed to achieve large-scale EV-RE integration		
Output	Indicators	Status and Achievements as at 20 October 2020
3.1: Demonstration of integration of EVs with the power grid, needed as basis for EVs eventually to address intermittency issues of large-scale RE power incorporation into the grid.	1,000 smart charging devices and electric vehicles successfully participating in smart charging system in Yancheng, including: trucks: 700, (b2) taxis: 50, (b3) buses: 10, (b4) fleet sedans: 100, and (b5) private or rental sedans: 140 200 smart charging devices and 200 (daily average) electric vehicles (hourly car	Ongoing Activity 3.1.1: Shanghai demo: proceed as planned. Smart charging systems for Shanghai demo has begun to build with remarkable results. Yancheng demo: Not started. The demo of Yancheng is transferred to Qingdao, and the construction is expected to start in November

	<p>sharing sedans) successfully participating on a daily basis in smart charging system in Shanghai</p>	<p>2020. This change has been negotiated with UNIDO and MIIT, and has been approved according to China-SAE.</p> <p>Activity 3.1.2: Not started. The demo of Yancheng is transferred to Qingdao, and the implementation is expected to start at the end of 2020. This change has been negotiated with UNIDO and MIIT, and has been approved according to China-SAE.</p> <p>Activity 3.1.3: Completed beyond expectation. As of August 2020, 74 smart charging stations and about 821 smart charging poles have been constructed, of which 73 stations and 791 poles have been completed. The number of hourly car sharing vehicles reached 7290 (as of November, this number increased to 8105), and the number of the electric rental buses reaches 1084. (Target: 200 smart charging poles, 50 smart charging stations, 8,000 hourly car sharing passenger vehicles and 200 pure electric rental buses)</p> <p>The Project of Qingdao demo has been initiated and approved.</p> <p>Estimated completion time: 27 July 2021</p>
<p>3.2A: Demonstration of integration of EVs into RE micro-grids, including demonstration of micro-grids incorporating wind, PV, use of retired EV batteries as storage, EVs, and buildings and a manufacturing facility</p>	<p>87 EVs powered mainly by RE micro-grid demos in Yancheng</p> <p>90 EVs powered mainly by RE micro-grid demo in Shanghai</p>	<p>Ongoing</p> <p>Activity 3.2A.1: Not started. The PMO intends to select Yancheng Power Supply Company of State Grid to continue the activity, which is expected to be launched in 2021.</p> <p>Estimated completion time: 27 July 2021</p> <p>Activity 3.2A.2: Completed. 9 sets of optical storage and charging micro-grid demonstrations have been started to build, of which 6 sites have been completed. Currently, data statistics tools are being built, in order to record the daily number of electric vehicles powered by RE micro-grids. As of August 2020, 4 of the 6 sites have PV power generation for charging electric vehicles. According to statistics, the average daily PV power generation is about 1500kWh, which can ensure the charging of 68 Roewe E50s.</p>

3.2B: Demonstration of V2G technologies and pilot commercial systems enabling EVs (or retired EV battery packs) to send power back to the micro-grid at times that it is needed	<p>10 electric vehicles successfully participating in demonstration of micro-grid connected V2G system in Yancheng/ 5 in Shanghai</p> <p>Amount of energy sent to the grid via V2G of Yancheng micro-grid: 48,180 kWh / Shanghai micro-grid: 22,886 kWh (assumes V2G demo operational for two years)</p>	<p>Ongoing</p> <p>Shanghai: The construction of five V2G charging piles has been completed. One V2G vehicle was connected. One set of V2G vehicle piles can be connected to the micro-grid test. At present, the construction of the project has been completed and has not yet been put into testing.</p> <p>Yancheng: V2G demonstration will be transferred to Qingdao. It is expected to be completed in the first half of 2021.</p> <p>Estimated completion time: 27 July 2021</p>
3.3A: Demonstration of greater density of the EV stationary charging network, thus serving as a basis for scale-up of EV-RE integration	4000 stationary EV charging poles of EVCARD business in Shanghai	<p>Completed.</p> <p>As of August 2020, the number of public charging piles in Shanghai has reached 57,200.</p>
3.3B: Demonstration of alternatives to stationary charging stations, in particular mobile charging station vehicles, to deal with emergency needs for charging, thus increasing the feasibility of EV use and thereby supporting the scale-up of EV-RE integration	<p>3 mobile charging stations circulating on daily basis in Yancheng</p> <p>36 retired EV battery packs used on mobile charging stations on daily basis in Yancheng</p>	<p>Ongoing</p> <p>The activity has been started. More than 3 mobile charging stations will be established in Qingdao to rescue the electric vehicles in Qingdao district that cannot be started due to insufficient electricity.</p> <p>Estimated completion time: October 2021</p>
3.3C: Demonstration of business models to scale-up the number of EVs, thus laying the ground work to realize the benefits of EV-RE integration on substantial scale	<p>Number of hourly car rental (“car sharing”) passenger vehicles in Shanghai’s EVCARD fleet: reach 8,000 from 1,600</p> <p>Number of pure electric buses in E-drive’s rental fleet: reach 200 from 50</p>	<p>Completed</p> <p>As of November 2020:</p> <p>The number of hourly car sharing vehicles in Shanghai’s EVCARD fleet reached 8105. The number of rental sites reached 507 (the number of sites reached 4013 in 2017, but almost were small scales with just 3-5 parking space. To improve operational efficiency and service quality, a large number of small-scale sites have been phased out, and many virtual sites were set up. So the number of sites decreased), and the number of charging poles reached 3593.</p>

		<p>The number of electric buses in E-drive's rental fleet (EDRIVE) reached 1084, of which 250 vehicles have been put into operation, with 64 charging stations, more than 170,000 mobile APP users.</p> <p>Estimated completion time: 27 July 2021</p>
3.4: Demonstration of energy management centers that collect and manage data on dispersed EVs and retired EV battery packs used as storage for the grid, so that the charge and discharge of these devices can be managed	<p>Number of vehicles receiving commands from Yancheng's energy management center on an ongoing basis that control their charging times (and discharging times, if relevant) including: (b1) trucks: 700, (b2) taxis: 50, (b3) buses: 10, (b4) fleet sedans: 110, and (b5) private or rental sedans (Note: Likely to be similar to Yancheng indicator values for outcome 3.1A, except that 10 V2G vehicles are added): 140</p> <p>Number of vehicles receiving commands from Shanghai's energy management center on an ongoing basis that control their charging times (and discharging times, if relevant), including: (b6) hourly car sharing sedans: 205</p>	<p>Ongoing</p> <p>At present, an energy management center has been established in Shanghai. Specific data collection standards will be formulated for the center to simultaneously interface with the software systems of multiple facility operating enterprises. The Yancheng's energy management center will be transferred to Qingdao, which will be established in 2021.</p> <p>Estimated completion time: 27 July 2021</p>
3.5A: Detailed monitoring and assessment of project demos of EV integration with the power grid	<p>Number of areas in which EV integration with power grid demo data and information on experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) smart charging and (2) energy management centers): 2</p> <p>Number of smart charging poles in Shanghai for which data is collected and assessed for 2 years: Yancheng 1000, Shanghai 200</p>	<p>Ongoing</p> <p>As of August 2020, 74 smart charging stations and about 821 smart charging poles have been constructed in Shanghai, of which 73 stations and 791 poles have been completed. But the data is not fully accessible yet.</p> <p>The activity will continue.</p> <p>Estimated completion time: 27 July 2021</p>
3.5B: Detailed monitoring and assessment of project demos of RE-EV micro-grids	<p>Number of areas in which EV-RE micro-grid demo data and information on demo experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) EV-RE micro-grid generally and (2) V2G in RE micro-grid): 2</p> <p>Number of regular micro-grid charging poles and number of V2G charging poles</p>	<p>Ongoing</p> <p>As Activity 3.2B, the construction of five V2G charging piles has been completed. One V2G vehicle was connected. One set of V2G vehicle piles can be connected to the micro-grid test. At present, the construction of the project has been completed, but has not yet been put into testing. Therefore no data is available yet.</p>

	<p>for which data is collected and assessed for 2 years (number of regular poles, number of V2G poles):</p> <p>Yancheng: regular: 80, V2G: 10</p> <p>Shanghai: regular: 85, V2G: 5</p>	<p>Next, the facilities purchased in Activity 3.2B will be used to carry out the V2G demonstration. Shanghai: 5 V2G charging piles and 5 V2G vehicles will be demonstrated.</p> <p>Qingdao: 10 V2G charging piles and 10 V2G vehicles will be demonstrated.</p> <p>The activity will continue.</p> <p>Estimated completion time: 27 July 2021</p>
<p>3.5C: Detailed monitoring and assessment of aspects of project demos related to the use of retired EV batteries, including development of know-how with regard to use of retired EV batteries so that they can be leveraged as tools of EV-RE integration</p>	<p>Number of areas in which retired EV battery demo data and information on demo experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) retired EV battery packs in RE micro-grid, (2) retired EV battery packs in mobile charging station vehicles, and (3) other testing of retired EV batteries):3</p> <p>Number of retired EV battery packs utilized in the project demos for which data is included in the safety database and associated assessment: 291</p> <p>Number of key technical topics covered in retired EV battery guidelines (possible key topics include: maintenance, repair, and refurbishment): 3</p> <p>Number of key battery chemistries covered in technical and economic evaluation of use of retired EV batteries: 3</p>	<p>Ongoing</p> <p>The demonstrations for the retired EV battery have been started in Shanghai and Qingdao.</p> <p>The activity will continue.</p> <p>Estimated completion time: 27 July 2021</p>
<p>3.5D: Detailed monitoring and assessment of aspects of project demos related to scale-up and increased concentration of China's EV fleet and charging infrastructure</p>	<p>Number of areas of scale-up and increased concentration in which demo data and information on demo experience is collected, assessed including business feasibility assessment, and reported with recommendations. (Areas and to be covered include: (1) mobile charging station vehicles generally (Yancheng), (2) increased density of network of stationary charging poles (Shanghai), (3) car sharing EV scale up (Shanghai), and (4) EV rental</p>	<p>Ongoing</p> <p>As of August 2020:</p> <p>(1) The density of fixed location charging infrastructure has increased (Shanghai). The number of public charging poles reached 58.8 thousand.</p> <p>(2) The scale of EV rental bus has expanded (Shanghai). The number of electric buses which have been put into operation reached 250.</p>

	<p>bus scale up (Shanghai)): 4</p> <p>Number of mobile charging stations for which general operational data is collected and assessed for 2 years: 3</p>	<p>(3) More than 3 mobile charging stations will be established in Qingdao to rescue the electric vehicles in Qingdao district that cannot be started due to insufficient electricity.</p> <p>As of November 2020:</p> <p>(4) The scale of electric car sharing has expanded (Shanghai). The number of hourly car sharing passenger vehicles reached 8105. The number of rental sites reached 507, and the number of charging poles reached. The cumulative registered members exceeded 2.51 million.</p> <p>One energy management center has been established. But because of the implication of COVID-19, the data collection, evaluation and reporting process have not been completed as mentioned in 3.5C.</p> <p>The activity will continue.</p> <p>Estimated completion time: 27 July 2021</p>
--	--	---

Component 4, under the responsibility of SAE-China, focuses on raising awareness and knowledge of EV-RE integration amongst both industry and consumers. SAE-China's recent reporting conveys a general impression that its targets will be met, with an estimated 50% completion by December 2020 according to MTR interviews. Table 7 provides the current status and achievement.

In this component, most of the expected meetings have been held as planned, and some seminars have been held together with Task 1.1 or 1.2. The interviewer said, "the way that several meetings are held in a centralized manner can improve efficiency and facilitate the concentration of stakeholders." According to the data provided by SAE-China, the number of participants and companies in each meeting exceeded the KPI requirements. But similar to Activity 1, the proportion of female participants varies, which is difficult to meet the requirement of 35%.

SAE-China has established a website¹⁷, published several online articles, prepared a publicity video of demo and several printed materials, etc. According to the informant, in September 2020, under the coordination of the PMO, hundreds of domestic media reported the achievements of the project in the past two years. However, during the MTR, it was also found that the content of the website was simple (mainly news), publicity videos were not online, printed materials had not been published to the public, and broadcast publicity had not yet been

¹⁷ <http://gef.sae-china.org/>

carried out. Therefore, the overall publicity effect was limited, and the activities should be further implemented.

Up to 2020, no special strategies or measures adopted in EV-RE integration outreach that specifically target the interests and concerns of women. However, according to SAE-China, a series of publicity activities aimed at women's groups will be launched in 2021, in conjunction with the Women's Federation and other social organizations, to increase women's understanding of electric vehicles and smart charging systems, increase the proportion of female drivers, and achieve the ultimate goal of energy saving and emission reduction.



Figure 7: Website for promotion of EV-RE integration



Figure 8: The publicity video of Shanghai demo

Table 7: Summary of Project's Success in Producing Component 4 Outputs related to Outcome 4

Outcome 4: Increased knowledge and capacity of business and consumer stakeholders, facilitating awareness, research and development, manufacture, operation, and maintenance with regard to EV-RE integration		
Output	Indicators	Status and Achievements as at 20 October 2020

4.1A: Forums for industry, including both domestic and international players active in the China market in the vehicle, power, and other related sectors, on EV-RE business models, technology, and demonstration results	<p>30 distinct industrial companies related to EVs, power, or RE attending at least one of project's forums</p> <p>Proportion of attendees at forums for industry that are women: 35%</p>	<p>Ongoing, simultaneously with Activity 2.3.2</p> <p>The PMO held one EV-RE integration development forum in Shanghai on 15 September 2020. Experts of UNIDO, Shanghai government officials, industry associations, well-known universities, as well as corporate representatives participated in the forum. The other international forum will be carried out during the 2021 Shanghai International Auto Show, with the theme of EV-RE Integration to promote the project results. The relative industrial companies will be invited to participate in the forum.</p> <p>Number of participants (2020): 50 Proportion of women: 40%</p> <p>Estimated completion time: 30 August 2021</p>
4.1B: Dissemination to industry of project's EV-RE information base	<p>Number of industrial organizations that receive project's EV-RE information base materials and find them useful in their business plans: 10</p>	<p>Ongoing</p> <p>(1) The website for promotion of EV-RE integration has been established. The content of the website needs further improvement for promotion and publicity.</p> <p>(2) The content of the printed materials ("information notebooks") for industry on EV-RE integration have been organized. The next step will be making the paper documents for publicity in the industry, as well as the international conference platforms such as FCVC0201 and WNEVC2021.</p> <p>Estimated completion time: 27 July 2021</p>
4.1C: Meetings publicizing EV-RE related technical standards, held for vehicle OEMs, charging equipment suppliers, and other related industrial companies	<p>Number of persons attending meetings that do well enough on end of meeting test to confirm acceptable grasp of materials presented: 60</p> <p>Proportion of attendees at standards meetings that are women: 35%</p>	<p>Completed, simultaneously with Activity 1.1D, Activity 1.2.1 and Activity 1.2.8</p>
4.1D: Technical operation and maintenance workshops related to EV-RE integration aspects held for relevant industrial organizations	<p>Number of persons attending meetings that do well enough on end of meeting test to confirm acceptable grasp of materials presented: 50</p> <p>Proportion of women attendees at O&M workshops: 35%</p>	<p>Partly completed, simultaneously with Activity 1.2.8.</p> <p>The concept of "Technical operation and maintenance related to EV-RE integration aspects" needs to be further confirmed before a maintenance workshop was held.</p> <p>Estimated completion time: 27 July 2021</p>

4.1E: Establishment of industry alliance or association subcommittee for promoting and advancing EV-RE integration and liaising with government on EV-RE integration policy	Number of distinct companies that join the industry alliance set up by the project to advance EV-RE integration: 12	Ongoing It is planned to set up a special committee under the China-SAE for promoting the level of EV-RE integration and liaising with government on EV-RE integration related policy. In preparation. Estimated completion time: 27 July 2021
4.2: Awareness raised among current and future potential car sharing companies of various car sharing business models and integration of EVs with RE in car sharing businesses	15 existing car sharing business entities participating in project exchange workshop 15 entities interested in newly entering the car sharing business participating in project exchange workshop	Completed The International Forum on Electric Vehicle Demonstration Cities under the International Smart Shared Mobility Congress 2019 was held in Huadu, Guangzhou in November 2019, covering the promotion of electric vehicle demonstration cities, shared travel, autonomous driving, and other technical and business model innovations. This forum has attracted representatives from more than 20 countries, companies and international organizations. Participating car sharing business entities: 50
4.3A: Media promotion of EV-RE integration, raising awareness of the public regarding the need to incorporate RE into EV development to realize the environmental potential of EVs and educating the public on various aspects of EV-RE integration	Number of viewers of documentary film on EV-RE integration: 50,000 Number of news articles (print media or online news) in Chinese press on EV-RE integration: 30 Number of radio listeners exposed to EV-RE integration via project's radio campaign: 1 million Number of special strategies or measures adopted in media EV-RE integration outreach that specifically target the interests and concerns of women: 3	Ongoing (1) The publicity video of Shanghai demo has been completed. The video introduced the contents of the Shanghai demo from multiple angles, and showed a series of project activities and demonstration silhouettes since its inception in 2018. Number of viewers of documentary film on EV-RE integration: 543936 (2) The PMO set up a website for promotion of EV-RE integration to release the latest progress of the project. The WeChat public account of the China-SAE is also used for external publicity. Under the coordination of the PMO, hundreds of domestic media reported the achievements of the project in the past two years at the end of September 2020. A science video for new energy vehicle safety was produced, and played on the network platform. Shanghai PMO produced a publicity video, and published 14 articles about the GEF6 project for promotion. (3) The promotion activities through radio media have not been started yet. This activity will be started in December 2020.

		Estimated completion time:31 October 2021
4.3B: Promotion of EV-RE integration to consumers via social organizations, increasing consumers' understanding of and attraction to the concept and related opportunities	<p>Increase in membership of EV clubs targeted by project (number of new members):200</p> <p>Number of persons exposed to EV-RE integration concepts via EV social clubs: 500</p> <p>Number of women's organizations and number of women reached by project's special outreach to women's organizations to promote EV-RE to them: 8 organizations and 400 women</p>	<p>Not started yet</p> <p>The activity will be carried out in 2021 with the cooperation of NIO.</p> <p>This activity will be started in December 2020.</p> <p>Estimated completion time:31 October 2021</p>
4.3C: Outreach on social media platforms and cooperation with social media companies to carry out promotion of EV-RE integration	<p>Number of social media platforms on which the project's social media outreach campaign generates ongoing discussion regarding EV-RE integration: 3</p> <p>Number of special strategies or measures adopted in social media EV-RE integration outreach that specifically target the interests and concerns of women: 2</p>	<p>Ongoing</p> <p>SIAC has carried out relevant activities.</p> <p>Estimated completion time:31 October 2021</p>
4.4: An EV-RE integration demonstration center in Yancheng, created to raise awareness on the topic of EV-RE integration amongst consumers, companies using EVs, and industries related to RE or EV	<p>Number of Chinese government officials that have visited EV-RE integration demonstration center: 200</p> <p>Total number of persons that have visited EV-RE integration demonstration center: 2000</p>	<p>Ongoing</p> <p>It is planned to create an EV-RE integration demonstration center in Qingdao instead of Yancheng to raise awareness on the topic of EV-RE integration. The contract has been signed and the activity will be implemented.</p> <p>Estimated completion time:31 October 2021</p>

Component 5, under the responsibility of UNIDO, focuses on refining and then implementing the project's monitoring and evaluation plan. Table 8 provides the current status and achievement. The M&E activities are carried out with the development of the project. Most of the work has been carried out as planned, but some work (such as Activity 5.2) has not yet started.

In the project, an effective M&E plan was established and appropriate funds were allocated to

it. SAE-China submitted the biannual and annual PIR on time. However, some KPI indicators (such as the number of participants, the number of government officials, the proportion of women, the amount of carbon emissions reduction, etc.) were not included, leading to a lot of time spent on the collection of relevant indicators in the MTR.

The national and local PSC meetings are held once a year, and the MTR coincides with the local PSC meeting of Shanghai demo. The evaluation team is fortunate to be involved in it. It was found that local PSC and the experts committee played an important role in demo project recruitment and implementation. Shanghai PMO staff stated, “We have established an expert committee and invited various experts to join in, effectively guiding the recruitment and development of the demo projects. This is one of the most important factors for the success of Shanghai demo.” As of January 2021, the national PSC meeting of 2020 has not been held due to the impact of COVID-19 and the difficulty of gathering members. According to SAE-China, it is expected to be held in early 2021.

Table 8: Summary of Project's Success in Producing Component 5 Outputs related to Outcome 5

Outcome 5: A robust mechanism for M&E in place to ensure the attainment of project outcomes	
Output	Status and Achievements as at 20 October 2020
5.1: Project monitoring plan refined and executed.	<p>Ongoing</p> <p>(a) The measuring indicators have been developed. (Tracking tool)</p> <p>(b) Three biannual reports were prepared instead of quarterly reports.</p> <p>(c) One annual report (201907-202006) was prepared.</p> <p>(d) The project team monitoring meetings were held periodically.</p> <p>(e) The PSC monitoring meetings were held annually. So far one meeting has been held in 2019, and the second meeting is planned to be held in early 2021.</p> <p>Undertaken by UNIDO</p> <p>Period: August 2018- End of the project</p>
5.2: Data and information collected to measure certain of the project's outcome and output level indicators, as well as indicators for project's Environmental and Social Management Plan (ESMP). While determining the value of many of the outcome and output indicators may require a minimal level of effort and thus be fully handled by the project team member responsible for monitoring, determining the status of certain indicators may require separately budgeted activities, such as surveys. This output will	<p>Not started yet</p> <p>Undertaken by UNIDO and SAE-China</p> <p>Period: September 2020- End of the project</p>

provide for the collection of data and information needed for assessment of such indicators via separately budgeted activities.	
5.3: Project mid-term review and terminal evaluation conducted.	<p>Ongoing</p> <p>Chinese Research Academy of Environmental Sciences was authorized by UNIDO to carry out the MTR. Period: November 2020- February 2021</p> <p>The terminal evaluation will be conducted in the last six months of the project.</p>
5.4: Recommendations and agreed upon action plan for long term project sustainability as part of follow-up to terminal evaluation.	<p>Not started yet</p> <p>The activity will be carried out after the project is completed.</p> <p>Undertaken by UNIDO</p>

3.2.3 Efficiency

Finding 5: The project has gained efficiencies in good project management, strategic use of funds and co-financing. Regarding the funding: the GEF fund was generally used as planned, and has achieved a good leveraging effect. Regarding the timing: the project deadline is expected to be extended to March 2022. The stagnation of Yancheng demo led to time inefficiency. In addition, some meetings and trainings were re-organized in implementation, which effectively improved the efficiency of the project.

The project payments and expenditures were basically in line with budgets. Based on the audit report for the first year of the project, from August 2018 to October 2019, SAE-China received the first grant of 2,043,790 USD, the planned expenditure was 1,858,800 USD, and the actual expenditure was 1,777,400.42 USD, which is 86.97% of the grant. According to the project's implementation plan of the second-year, from November 2019 to December 2020, the planned expenditure was 3,533,125 USD, and the actual expenditure was 2,825,245.64 USD as of MTR, which is 86.49% of the grant.

It is worth noting that the projects in Shanghai demo were subsidized after implementation, which guaranteed the projects quality, but also resulted in a lower funding implementation rate. However, the form of project recruitment has effectively motivated the social funds.

Most of the activities can be implemented on schedule, but the stagnation of the Yancheng demo has led to decline in time efficiency. SAE-China stated that they have signed agreements with Qingdao as an alternative demo city. According to SAE-China, the project has applied to extended to March 2022 and has been approved by UNIDO, MIIT and GEF, and they believed that the project can be completed before the deadline. Shanghai demo is a highlight benefited

from excellent work and expert team, effective project organization. 90% of its targets have been completed, which exceeds the expectations.

In order to further improve the efficiency of project implementation, SAE-China has coordinated and reorganized the development of some tasks. For example, the meetings in Task 4.1 were held together with meetings in Task 1.1 and Task 1.2. It helps to reduce the time and cost of both participants and the project.

3.2.4 Gender Mainstreaming

Finding 6: There were many gender-related indicators in the results framework. Women played a key role in the project. Some of the activities were carried out with active participation of women such as electric bus rental demo. Although a large number of gender-related indicators were designed in the results framework, the details of them were not described in the PIRs.

The project managers of UNIDO, SAE-China and some other institutions involved in this project are all women, so it can be seen that women played a key role in the project. The proportion of women in PMO is 16%, and in PSC it is 33%. In Shanghai demo, there are 43 people in local PSC, PMO, and expert committee, of which 22 are women (proportion: 51.2%).

In total, women and men benefited equally from the project's interventions. In particular, some activities were strongly welcomed by women, and women actively participate in them. For example, the informant stated that 60% of the users (totally 300,000) in electric bus rental are women in Shanghai demo. The demo executor believes that this is mainly due to the route customization mode of the E-bus, which is safer and cheaper than the traditional taxi.

A large number of gender-related indicators (especially the proportion of women participating in training and conferences) were used in the project design, but the progress was not provided in the PIRs. According to the data obtained from SAE-China in MTR, there is no gender threshold for all the trainings and meetings, and the proportion of women's participation varies. In some meetings, the proportion can reach 35%, but in other meetings, this proportion cannot meet the requirement. According to SAE-China, a series of publicity activities aimed at women's groups will be launched in 2021, in conjunction with the Women's Federation and other social organizations, to carry out the popularization and promotion of electric vehicles, charging piles, EV-RE integration, etc.

3.2.5 Sustainability

The project incorporates a heavy level of policy work and capacity building work directly related to EV-RE integration. While the demos will serve the purpose of "proving the concept," it is the accompanying policies specifically addressing EV-RE integration that will cause this integration to grow and be sustained in China. Further, capacity building will ensure that government officials have a good enough understanding of EV-RE integration to promote it and incorporate it into their plans. Finally, capacity building for industry will ensure that commercial entities have enough understanding of EV-RE integration to consider pursuing new

opportunities in the area.

The contract identified 11 risks and outlined corresponding and appropriate mitigation measures. It is not foreseen that climate change will negatively impact performance of the project, so such a risk is not included. There is also risk analysis in the PIR (dated 1 July 2019 – 30 June 2020), but all of the risks were assessed as having the same risk level as the project's outset. PIRs show that institutional risk was not raised. Although it has been stated that the change of the director of the Yancheng demo has caused project stagnation, the report was too optimistic and did not estimate the risk of continued stagnation.

In addition, the evaluation team draws attention to risks to social stability and industrial production that have recently emerged related to COVID-19. During the evaluation, the number of cases reported in China was about 100 each day. Most cities have adopted measures 'only go out for essential trips', and suggested reducing the gathering of people.

According to PIR, the project implementation progress is delayed due to COVID-19 and Nation-wide lockdown measures in China during 2020. Due to the COVID-19, most of the project contract companies were required to work at home, planned meetings and events were postponed to prevent massive infections, supporting factories and constructions were gradually starting production, local government set up epidemic prevention as their top priority. The lockdown also affected the delivery and installation of equipment for the demo projects, caused delays in contract execution. Due to restriction in air-travel, physical visits to demo cities could not be undertaken for data collection and discussion with key city officials/counterparts. However, during this period, UNIDO has made utmost efforts and continued consultation and discussion with national stakeholders on implementation of the projects.

3.2.5.1 Socio-Political Risks

Finding 7: The project's objective of reducing carbon emissions and addressing climate change is highly consistent with national and global development strategies. During the project implementation, some policy documents related to EV-RE integration have been formed and released, which will also play a positive role in the further promotion of the project results.

On September 22, 2020, President Xi of China delivered an important speech at the General Debate of the 75th Session of the United Nations (UN) General Assembly. He noted that China will aim to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060. On December 12, 2020, China proposed at the United Nations "2020 Climate Ambition Summit" that by 2030, the proportion of non-fossil energy in primary energy consumption will reach about 25%. The IANEV project aims to reduce carbon emissions and respond to climate change, which is highly consistent with national and global development strategies. The EV-RE integration is expected to be further promoted.

In addition, during the project implementation, some policy documents (including roadmaps) and technical specifications supporting the EV-RE integration have been formed and released,

such as the "New Energy Vehicle Industry Development Plan (2021-2035)". The plan proposed that in 2025, the sales of new energy vehicles will reach 20% of the total sales of new vehicles. It also proposed some tasks as strengthening the energy interaction between new energy vehicles and the power grid (V2G), and promoting efficient synergy between new energy vehicles and renewable energy, etc., which will play an active role in the further promotion of project outputs.

3.2.5.2 Financial Risks

Finding 8: The strengthening of national policy generally means an increase in government funding support. The subsidy policies for EV and RE will continue. In addition, pilot studies have also been conducted for the business model of EV-RE integration. Some of the demonstrations have already or are expected to achieve good economic benefits to support the further sustainability of the project outputs.

The strengthening of policy support generally indicates an increase in government funding support. China has just proposed the carbon reduction goal, and is organizing to prepare the action plan; proposed the "New Energy Vehicle Industry Development Plan (2021-2035)". In order to speed up the implementation of these plans, the government will generally provide financial support.

China has established clean energy development fund, and renewable energy development fund, etc., which are specifically used to support the development and utilization of renewable energy and other clean energy. In addition, there are national and local EV subsidy policies and the exemption of EV purchase tax, which can effectively promote the further development of China's EN vehicle and RE market.

Shanghai demo has conducted demonstrations of business models in multiple scenarios, and some of them have got good economic benefits. For example, the customized electric bus rental model and electric car sharing model. For the E-bus rental, as of August 2020, the number of vehicles in Shanghai's E-bus rental fleet (branded EDRIVE) has reached 1084 (of which 250 are used for custom buses); It has 64 charging stations and more than 170,000 mobile APP users; 32 dedicated lines have been opened and are in operation. The interviewee said that, "The project is currently in a state of balance. With the increase of users, it is expected that net profits will be realized soon." For the electric car sharing, the number of hourly car sharing vehicles in Shanghai has reached 8105 as of November 2020. The number of rental sites reached 507, and the number of charging poles reached 3593. The cumulative registered members exceeded 2.51 million. It is also noted that the number of users are still limited, and subsequent publicity needs to be increased.

3.2.5.3 Institutional Framework and Governance Risks

Finding 9: After the project, activities related to EV-RE integration will mainly rely on governments and market players. The project has got a good effect on the cultivation of the

market. The technical and policy elements required to support the continuation and replication of the project have been basically formed, and some of the relevant training and promotion activities have been carried out.

In China, industry development generally depends on government guidance and market cultivation. This also applies to the EV and RE industry. The government leads the development of the industry through the promulgation of policies, standards, and regulations. Under the guidance of the government, various market entities, mainly enterprises, will carry out activities to obtain economic benefits and support the further development of the industry.

Existing laws and policies support the development of EV and RE industries. The "Renewable Energy Law of the People's Republic of China"¹⁸ states that the country will list the development and utilization of renewable energy as a priority field for energy development. It encourages economic entities of various ownerships to participate in the development and utilization of renewable energy, protects the legitimate rights and interests of renewable energy developers and users in accordance with the law, and encourages and supports the renewable energy power generation connected to the grid. In addition, Chinese government has increased its support for EV and RE in recent years. In particular, the project outputs have promoted the release of the "New Energy Vehicle Industry Development Plan (2021-2035)". China's EV-RE integration development are facing unprecedented opportunities.

Many outputs including technologies, policies, business models, etc. have been achieved in this project, a number of government officials were trained, and the awareness of enterprises and the public were raised. In addition, the EV-RE integration business model in multiple scenarios were demonstrated and a lot of experience was gained. On the one hand, it has increased the government's understanding of EV-RE integration, and promoted the formulation of policies in related fields. On the other hand, it has a good incubation effect on the cultivation of EV and RE markets, and can strongly support the continuation and replication of the project. One highlight is the E-micro class for publicity and knowledge learning, which have achieved very good effects. At present, 388 E-micro class have been organized.

3.2.5.4 Environmental Risks

Finding 10: The project is conducive to reducing carbon emissions, which has a positive impact on the ecological environment in China and the world, with no adverse environmental impacts likely to affect the sustainability of benefits.

The project's outputs and higher-level results are designed to have an impact, either directly or indirectly, on China energy use, consumption and GHG emissions. These furthermore contribute to global environmental benefits (GEBs) and in no way jeopardize the sustainability of the project's benefits. According to the statistics during MTR, During the project period, the PV power generated has reached 5.323 million KWh, and the CO₂ emission reduction is about

¹⁸ http://www.nea.gov.cn/2017-11/02/c_136722869.htm

5,306.69 tons. As outlined in Project Document, the direct GHG emission reductions achieved (via replacement of ICEVs as compared to the business-as-usual case and replacement of East China Grid based power with micro-grid RE) via Shanghai Pilot during project is about 7,332 tons CO₂. And the direct emission reductions after project will reach 51,852.0 tons CO₂.

3.3 Project Implementation Management

3.3.1 Project Management

Finding 11: National PSC and PMO have been established. In demo cities, local PSC, PMO and expert committee have also been set up. Communication between the stakeholders is smooth and transparent, and most of partners can complete the assigned tasks in a timely and effective manner. The PSC meetings are held regularly. There have been personnel changes in some agencies. Most of the changes have not affected project implementation, except for the Yancheng demo. SAE-China communicated with UNIDO and GEF in time and solved the problem, significantly reducing the negative impact.

Implementation arrangements outlined in the contract have been followed (see Section 2.3.3). In the project implementation, the PSC and PMO were established as planned. The number of PSC members is 15, include MIIT, MOF, UNIDO, SAE-China, the pilot executors, etc. The demo cities also established local PSC and PMO. The management arrangements effectively promoted the development of the project.

The PSC meeting is held once a year. It has been held once in 2019. The meeting in 2020 will be held in early 2021 due to the COVID-19. The demo tasks in Shanghai have been implemented as planned and the local PSC meetings were held every year. The evaluation team has participated in the 2020 meeting. Every year, SAE-China, as the project execution agency, submits the annual and biannual PIRs to UNIDO as planned, which also includes the progress of tasks in demo cities.

During the project implementation, there have been personnel changes in the participating partners. For example, the main staff of SAE-China, UNIDO HQ, and the director of Yancheng demo executor have all been replaced. Most personnel changes (SAE-China, UNIDO HQ) did not affect the implementation of the project. However, the Yancheng demo was severely affected, and the activities were stagnant. The informant said, "The Yancheng Bureau of Industry and Information Technology was very enthusiastic about the project at the beginning, but when the project was officially launched, the director of the bureau changed, and they lost interest in the project."

The national management and overall coordination mechanisms have been efficient and effective. The PSC provided strategic support, UNIDO and MIIT carried out timely and effectively monitoring and reviewing for the project performance, GEF allocated funds on time, experts committee provided technical support. Due to the effective project management, when problems occurred in the Yancheng demo, SAE-China communicated with the PSC timely and

decided to transfer the demo to Qingdao. This measure effectively solved the problem and greatly reduced the negative effects for further delays.

The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective. After the project execution agency put forward the problem occurred, it can quickly provide effective support, and organize communication and coordination when needed. The ability of the project manager is appropriate. The personnel replacement didn't affect communication. During project implementation, the project manager carried out field visit in Shanghai once (in 2019) and participated in the online seminar once.

3.3.2 Results-Based Work Planning, Monitoring and Evaluation, Reporting

Finding 12: The project's results framework was used as a management tool to guide development of work plans and to regularly monitor and report on results. There are project plans in the contract and PIRs. The project consumed more time at start-up, and the activities can be carried out as planned. An effective M&E plan is in place and appropriate funding is allocated to it. The project execution agency submitted biannual and annual PIRs on time, but the reports do not provide sufficient information on some of the KPI indicators.

The project's results framework was used as a management tool to guide the development of work plans that elaborate outputs and key activities across the components. SAE-China proposed the implementation plan for the later stage of the project in the PIR. According to SAE-China, the overall project implementation time is expected to be extended to March 2022, and the implementation time of some activities has also been adjusted. Based on the plan, sub-project subcontracting was carried out. Moreover, it was reported that the work plan was used to develop KPI indicators for the regional teams, who then allocated tasks according to their skillsets and workload.

The start-up process of the project is quite long. UNIDO put forward preliminary ideas in 2015, the contract was signed in 2017, and the project was officially launched in 2018. Most of the tasks can be carried out as planned. Shanghai demo is close to completion. Some other tasks, such as Qingdao demo's progress is slow due to the late start time. According to SAE-China, the implementation of these activities will be accelerated and are expected to be carried out before the deadline (March 2022).

When the project started, an effective M&E plan was established as the fifth component and appropriate funds were allocated to it. The plan was mainly carried out through monitoring progress reports and PIRs submitted by the project execution agency. According to the materials provided by UNIDO, SAE-China submitted biannual and annual PIRs on time. However, it can be seen that some KPI indicators were not clearly described in the reports, such as the number of participants, the proportion of women, and carbon emission reductions, etc., while these indicators are required in the results framework.

During the MTR, UNIDO provided a tracking tool for the project performance, including some

KPI indicators such as carbon emission reduction and energy saving. But at present, only the benchmark data and target data can be seen in the tool, and the other data is vacant. In the follow-up stage, UNIDO and SAE-China should collect relevant data in time.

Risk assessments were conducted before and during project implementation. The Project Document identified 11 risks and outlined corresponding and appropriate mitigation measures. All of the risks were assessed in the PIR as having the same risk level as the project's outset. The annual PIR¹⁹ shows that institutional risk was not raised although the change of the director of the Yancheng demo has caused project stagnation. After SAE-China confirmed the occurrence of the problem, SAE-China informed the PSC in time. Under the help of the PSC, the activities of Yancheng demo were adjusted.

3.3.3 Financial Management and Co-Financing

Finding 13: GEF allocated project funds timely as planned, and the funds were used in accordance with the terms and conditions of UNIDO, MOF, and the project management approach. Co-financing provided has reached 82% (see Annex 4) and were used as planned. The projects in Shanghai were subsidized after implementation, which guaranteed the projects quality, but also resulted in a lower funding utilization rate (The sub-contractors can only get about 30% of the expected funding support after the project is recruited and reviewed from SIAC).

The project was launched with GEF funding, together with cash and in-kind contributions from UNIDO, recipient government in China, and several private sectors (SAE-China and SIAC)²⁰. The original overall financial plan summary, indicative co-financing, and the planned breakdown by component, are contained in Annex 4.

Before the project implementation, co-financing partners signed commitment letters summing up to almost USD 117 million, which together with the USD 8.93 million provided through the GEF Trust Fund, gave the IANEV project overall financing of almost USD 125.93 million at its outset. The planned level of resources and in-kind contributions are judged to be adequate to deliver the programmed outputs and support their envisaged outcomes. With a 3-months 'no cost' extension, these resources are now being stretched to cover a 44-month duration (until March 2022). No instances of financial mismanagement have been detected.

Some of the co-financing has indeed materialized (e.g., co-financing from SIAC and Rugao for demonstration equipment, etc.). As of November 23, 2020, the total amount of co-financing allocated and used reached 95,586,229.15 USD (the breakdown is in Annex 4), which is 82% of the total planned co-financing funds. However, it is also noticed that due to the transfer of the Yancheng demo, Yancheng Municipal State-Owned Asset Investment Group and Yancheng Oriental Investment and Development Group have cancelled the co-financing plan. Although

¹⁹ Project Implementation Report (1 July 2019 – 30 June 2020) provided by SAE-China

²⁰ Project Document: Annex L cofinancing letters in CCM_9226_UNIDO_CEO End_GEF-6_China provided by UNIDO

SAE-China and UNIDO showed the intention of providing co-financing, no supporting materials for the allocation of the funds have been found.

SAE-China entrusts a third-party organization to audit the use of project funds every year, and the audit reports are provided to the PSC for inspection and supervision. According to SAE-China in January 2021, GEF has allocated grants twice, totaling 5,310,515.42 USD. The expenditure of the project in the first year (August 1, 2018-October 31, 2019) was 1,777,400.42 USD, and in the second year was 2,825,245.64 USD. Overall, the project was carried out as planned.

The projects in Shanghai were subsidized after implementation, which resulted in a lower funding implementation rate. The sub-contractors can only get about 30% of the expected funding support after the project is recruited and reviewed from SIAC. After all the projects completed, the remaining 70% can be obtained. SIAC stated that it will add the pre-acceptance step, and allocate the remaining funds after the pre-acceptance of each project, so that the allocation process can be speeded up.

Overall, the evaluation team concludes that fund flows are smoothly carried out and the projected financial resources and inputs are being managed and spent in a strategic, efficient, transparent, and accountable manner, in adherence to UNIDO, GEF and MOF policies and principles.

3.3.4 Stakeholder Engagement and Communication

Finding 14: Government stakeholders support project objectives and have an active role in decision-making through their engagement as implementing partners. The external communication mechanism of this project is well established, with an adequate budget, and has effectively promoted public awareness through holding large-scale meetings, establishing a publicity website, etc. The internal communication mechanism is smooth, and when problems arose, the project activities can be adjusted in time.

MIIT support the project's objectives and through engagement as implementing agencies. MIIT and MOF, as the main members of the PSC, have an active and daily role in decision-making that supports the project's efficient and effective implementation. In particular, MIIT has played an important role in the integration of project outputs into national policy and standard formulation. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project.

The project's external communications with stakeholders have been well-established, adequately budgeted under a formal workstream. During project implementation, many large-scale international conferences (such as the World New Energy Vehicle Conference) with great influence have been held and reported by the official media. A special publicity website has been established, which could improve awareness of the general public.

The internal project communication with stakeholders is regular and effective. The national and

local PMOs have a daily communication mechanism, mainly through telephone, email, etc. to maintain communication. At least every six months, the local PMOs submit a progress report to the national PMO. When the project execution agency SAE-China found that the Yancheng demo has problems, it reported to the PSC at the 2019 PSC meeting. Afterwards, the project execution agency selected a new demo city and expected to report the adjustment at the 2020 PSC meeting. Based on the smooth communication, the problem was effectively solved.

3.4 Performance of Partners

3.4.1 UNIDO

Finding 15: UNIDO's involvement is highly valued for its contribution of technical expertise, networks, thought leadership, and ultimate responsibility for the project, as GEF's implementing agency. The project manager of UNIDO has strong organization and coordination skills.

The project execution agency highly appreciated the participation of UNIDO. SAE-China has maintained smooth and effective communication with UNIDO, mainly through telephone, email, meetings, etc. The project managers of UNIDO have visited Shanghai once. In the project design stage, the UNIDO regional office played a very important role. Through multiple communications with GEF and MIIT, it promoted the establishment of the project. As China put forward the goal of carbon emission reduction recently, it fully proved UNIDO's foresight in the project's design.

The project manager of UNIDO has strong organization and coordination capabilities. The change in personnel didn't affect the implementation of the project. The project manager actively participated in the implementation of the activities, especially playing an important role in the organization and coordination of the PSC annual meeting. In addition, UNIDO is responsible for the M&E work of the project. When problems occurred, it organized research and made decisions in time.

3.4.2 National Counterparts

Finding 16: Relevant national ministries such as MIIT and MOF have been engaged as PSC members, fostering national ownership, assuring their influence on the project's efficient and effective implementation, and facilitating inter-departmental coordination. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project. SAE-China organized the activities and communicated with stakeholders in a timely manner.

Several government departments joined the project as partners, which also involved becoming PSC members. This structure fosters national ownership and gives involved stakeholders an active role in decision-making to assure efficient and effective implementation. The PSC includes government co-financing partners, which allows them to participate, guide, and measure the impact of their investment. All those taking part in the PSC are relevant, support

the project's objective and benefit from its outputs and outcomes, and have a key role to play in securing the sustainability of its benefits and results. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project. As a result, the project outputs did not play a sufficient role in policies in the energy and environmental fields.

In Activity 1 and Activity 2, the national government departments, especially the MIIT, played an important and active role in the preparation and release of relevant policies and technical guidance documents, and also promoted the publicity of project outputs in the general public. In Activity 3, the local government departments in the demo cities played an important role in promoting demo work and developing regional policy documents.

Compared with the co-financing letters provided by UNIDO, the amount of co-financing allocated by SIAC has exceeded the promised amount, reaching approximately 90 million USD. Although Rugao did not promise co-financing before the project, during project implementation, it has provided nearly 10 million USD. The co-financing allocated have effectively promoted the implementation of the project. According to SAE-China, the expected co-financing in the contract will be fulfilled before the deadline.

As the PMO, the SAE-China organized the development of various activities. When problems occurred in the project, SAE-China can communicate with stakeholders and make adjustments in time. However, there is no staff who only work on this project in PMO. The staffs working on the project also have many other tasks. It is difficult for the staffs to concentrate on this project, resulting in insufficient tracking and summary of project outputs. The PSC mainly provides guidance and supervision through the annual meeting. According to the interviewee, "we conduct daily communications with the partners as needed, but the annual PSC meeting is an important activity that brings all national counterparts together for discussion and communication." It can be seen that the internal coordination and communication of the PSC have played an important role in the application of project outputs in policy formulation and problem resolution.

3.4.3 Donor

Finding 17: As a donor organization, GEF readily approved the project design upon its initial submission, disbursed project funds in a timely manner.

This project has undergone discussions and revisions many times before its launch, and was approved by GEF in 2017, which shows that GEF has carefully considered this project. GEF allocated the project funds on time as planned, with 2,043,790 USD in the first year and 3,266,725.42 USD in the second year.

During the project implementation, GEF carried out project implementation supervision mainly through UNIDO, and did not maintain direct contact with SAE-China. One manager in SAE-China said, "we have not directly contacted with the GEF since I participated in the project in

2020.”

4. Conclusions, recommendations and lessons learned

Table 9 provides a summary of the MTR’s findings according to the criteria of UNIDO’s Evaluation ToR. These findings, which are underpinned by the preceding analysis and justifications, are the basis for drawing conclusions, lessons, and recommendations.

Table 9: Summary of Findings by Evaluation Criteria

Criterion	Summarized finding	Section	Rating ²¹
A. Project Design Assessment		3.1	
Project Design	The project design is seen as sound and appropriate, technically feasible and able to address the problems at hand. The project's financial, institutional and implementation arrangements are reasonable and make the best use of limited resources. The M&E plan has been established. However, the failure to adequately assess the risks during the project design phase led to a delay in the implementation of the Yancheng demo.	3.1.1	S
Project Results Framework / Logframe	The project's result-chain is clear and logical. It provides good support for activities development, sub-contracting and M&E.	3.1.2	HS
B. Project Performance and Progress Towards Results		3.2	
Relevance	The project is highly relevant for national development priorities, the intended beneficiaries, and implementing partners. It is fully pertinent to UNIDO’s mandate and domains of comparative advantage and fully aligned with the donor’s focal area priorities with respect to climate change mitigation.	3.2.1	HS
Effectiveness and Progress Towards Expected Results	Most of the activities went smoothly as planned, and achieved the expected results, especially Shanghai demo. However, the activities of Yancheng demo are stagnant. The project implementation should be speeded up in the future, especially the Qingdao demo, so as to ensure that the	3.2.2	S

²¹ Identified using this categorisation:

Rating scale for project performance:

Highly Satisfactory (HS): Level of achievement clearly exceeds targets and expectations; there are no shortcomings

Satisfactory (S): Level of achievement meets expectations (i.e. 80-95%); there are no or only minor shortcomings

Moderately Satisfactory (MS): Level of achievement more or less meets expectations (i.e. 60-80%); there are some shortcomings

Moderately Unsatisfactory (MU): Level of achievement is somewhat lower than expected (i.e. 60%) and there are significant shortcomings

Unsatisfactory (U): Level of achievement is substantially lower than expected and there are major shortcomings

Highly Unsatisfactory (HU): Level of achievement is negligible and there are severe shortcomings

Rating scale used to assess sustainability:

HL: Highly Likely L: Likely ML: Moderately Likely MU: Moderately Unlikely U: Unlikely HU: Highly Unlikely

	subsequent activities related to the dissemination of the pilot experience can be carried out on schedule.		
Efficiency	The project has gained efficiencies in good project management, strategic use of funds and co-financing. Regarding the funding: the GEF fund was generally used as planned, and has achieved a good leveraging effect. Regarding the timing: the project deadline is expected to be extended to March 2022. The stagnation of Yancheng demo led to time inefficiency. In addition, some meetings and trainings were re-organized in implementation, which effectively improved the efficiency of the project.	3.2.3	S
Gender Mainstreaming	There were many gender-related indicators in the results framework. Women played a key role in the project. Some of the activities were carried out with active participation of women such as electric bus rental demo. Although a large number of gender-related indicators were designed in the results framework, the details of them were not described in the PIRs.	3.2.4	S
Sustainability	<p>The project's objective of reducing carbon emissions and addressing climate change is highly consistent with national and global development strategies. During the project implementation, some policy documents related to EV-RE integration have been formed and released, which will also play a positive role in the further promotion of the project results.</p> <p>The strengthening of national policy generally means an increase in government funding support. The subsidy policies for EV and RE will continue. In addition, pilot studies have also been conducted for the business model of EV-RE integration. Some of the demonstrations have already or are expected to achieve good economic benefits to support the further sustainability of the project outputs.</p> <p>After the project, activities related to EV-RE integration will mainly rely on governments and market players. The project has got a good effect on the cultivation of the market. The technical and policy elements required to support the continuation and replication of the project have been basically formed, and some of the relevant training and promotion activities have been carried out.</p> <p>The project is conducive to reducing carbon emissions, which has a positive impact on the ecological environment in China and the world, with no adverse environmental impacts likely to affect the sustainability of benefits.</p>	3.2.5	HL
C. Project Implementation Management		3.3	

Project Management	National PSC and PMO have been established. In demo cities, local PSC, PMO and expert committee have also been set up. Communication between the stakeholders is smooth and transparent, and most of partners can complete the assigned tasks in a timely and effective manner. The PSC meetings are held regularly. There have been personnel changes in some agencies. Most of the changes have not affected project implementation, except for the Yancheng demo. SAE-China communicated with UNIDO and GEF in time and solved the problem, significantly reducing the negative impact.	3.3.1	S
Results-Based Work Planning, M & E, Reporting	The project's results framework was used as a management tool to guide development of work plans and to regularly monitor and report on results. There are project plans in the contract and PIRs. The project consumed more time at start-up, and the activities can be carried out as planned. An effective M&E plan is in place and appropriate funding is allocated to it. The project execution agency submitted biannual and annual PIRs on time, but the reports do not provide sufficient information on some of the KPI indicators.	3.3.2	S
Financial Management and Co-Financing	GEF allocated project funds timely as planned, and the funds were used in accordance with the terms and conditions of UNIDO, MOF, and the project management approach. Co-financing provided has reached 82% (see Annex 4) and were used as planned. The projects in Shanghai were subsidized after implementation, which guaranteed the projects quality, but also resulted in a lower funding utilization rate (The sub-contractors can only get about 30% of the expected funding support after the project is recruited and reviewed from SIAC).	3.3.3	S
Stakeholder Engagement and Communication	Government stakeholders support project objectives and have an active role in decision-making through their engagement as implementing partners. The external communication mechanism of this project is well established, with an adequate budget, and has effectively promoted public awareness through holding large-scale meetings, establishing a publicity website, etc. The internal communication mechanism is smooth, and when problems arose, the project activities can be adjusted in time.	3.3.4	HS
D. Performance of Partners		3.4	
UNIDO	UNIDO's involvement is highly valued for its contribution of technical expertise, networks, thought leadership, and ultimate responsibility for the project, as GEF's	3.4.1	HS

	implementing agency. The project manager of UNIDO has strong organization and coordination skills.		
National Counterparts	Relevant national ministries such as MIIT and MOF have been engaged as PSC members, fostering national ownership, assuring their influence on the project's efficient and effective implementation, and facilitating inter-departmental coordination. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project. SAE-China organized the activities and communicated with stakeholders in a timely manner.	3.4.2	S
Donor	As a donor organization, GEF readily approved the project design upon its initial submission, disbursed project funds in a timely manner.	3.4.3	HS

4.1 Conclusions

This project is carried out at a very appropriate time and point, and is very important to China and even the world. In the project implementation, innovative exploration in energy, especially in renewable energy, and transportation were carried out. Demonstrations of new technologies and business models related to EV-RE integration were also carried out in several cities, which provided strong support for the realization of the Chinese government's carbon emission reduction commitments.

At the design stage, the project designers have fully considered the characteristics of Chinese communities, such as high population density, concentrated housing, high mobility, etc. Representative cities of different scales such as large city (Shanghai), small and medium-sized city (Yancheng, Qingdao), county town (Rugao), etc. were selected for demonstration, and the EV-RE integration in different scenarios have been explored. Shanghai demo executor has carried out several successful demonstrations such as PV storage-charging-inspection smart micro-grid, electric bus rental, electric car sharing, V2G micro-grid, etc. The demonstrations have got significant effect, making important explorations for the city's low-carbon development.

In the process of project design and implementation, advanced technologies such as the Big Data are utilized. For example, an energy management center of Shanghai demo has been established, laying a foundation for data analysis. It also provides good experience for the EV industry to realize intelligent development during Chinese 14th Five-Year Plan period.

4.2 Recommendations

The Evaluation Team offers some key recommendations to support the project in its final phase. Wholly anchored in the preceding evidence, analysis, and conclusions, the recommendations outlined in Table 10 are briefly set in context recommendations, prioritized, and assigned lead

responsibility and timeline.

Table 10: List of Recommendations with their Context, Priority, Responsibility, Timeframe

Recommendation #1:	It is suggested that MEE and NDRC are included into the PSC. The benefits of the project in the field of energy and environment should be summarized. Besides, the projects can try to attract more people from relevant fields like energy and environment to participate in.
Context/comment:	China has recently pledged that the whole country will aim to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060, and proposed that the proportion of non-fossil energy in primary energy consumption will reach about 25% by 2030. In the context, the setting of this project is of great significance to the realization of related goals. Several national government departments like MIIT and MOF have deeply participated in the project as PSC members. However, the main departments related to climate change in China such as MEE and NDRC were not involved in the project. As a result, the project outputs played a limited role in the policy formulation. The MEE is currently preparing the action plan for China's carbon emission reduction. The outputs of this project can provide important support for the action plan.
Priority Level ²² :	Opportunity for Improvement
Responsibility:	UNIDO and MIIT
Proposed timeframe for implementation:	Immediate

Recommendation #2:	The demonstration scale is limited, and should be strengthened. The PMO should have full-time staff concentrating on this project, and strengthen the tracking of KPI indicators, such as carbon emission reduction and women's participation. These indicators should also be described in detail in the PIRs according to the results framework.
Context/comment:	Up to now, the wind power has not been used as the RE, and the PV power generation scale is not large enough. To achieve better results, in the next stage, the demonstrations should be strengthened.

²² Identified using this categorisation:

Critical recommendation: address significant and/or pervasive deficiencies in governance, risk management or internal control processes, such that reasonable assurance cannot be provided regarding the achievement of programme objectives.

Important recommendation: address reportable deficiencies or weaknesses in governance, risk management or internal control processes, such that reasonable assurance might be at risk regarding the achievement of programme objectives. Important recommendations are followed up on an annual basis.

Opportunity for improvement: comprise suggestions that do not meet the criteria of either critical or important recommendations, and are only followed up as appropriate during subsequent oversight activities.

	There is no staff who only work on this project in PMO. The staffs working on the project also have many other tasks. It is difficult for the staffs to concentrate on this project, resulting in insufficient tracking and summary of project outputs. Some KPI indicators were not clearly described in the PIRs, such as the number of participants, the proportion of women, and carbon emission reductions, etc., while these indicators are required in the results framework.
Priority Level:	Critical
Responsibility:	SAE-China
Proposed timeframe for implementation:	Immediate

Recommendation #3:	The evaluator believes that the project can be completed within the deadline. However, further risk assessments need to be conducted, and the project plan should be appropriately adjusted based on the assessment results, so as to ensure the successful completion of the project objectives.
Context/comment:	<p>The risk assessment was carried out during project design. But the pilot city's interest in the demonstration project was overestimated, and the institutional risk was not raised. There is also risk analysis in the PIR, but all of the risks were assessed as having the same risk level as the project's outset. Although it has been stated that the change of the person in charge of the Yancheng demo has caused project stagnation, the report was too optimistic and did not estimate the risk of continued stagnation.</p> <p>Many sub-projects have been affected by COVID-19. The construction of laboratory in the project was delayed, because the bidding work for the required equipment was not completed on time. As a result, some testing and verification work could not be carried out as planned. The economic benefit of the business model demo has declined due to the decreased number of users during the epidemic.</p> <p>The mobile charging market would shrink due to the high cost and the rapid increase of fixed charging piles in China. SAE-China will organize further research, and adjust the tasks related to mobile charging if the value of promoting mobile charging is little.</p> <p>Based on the information learned from this assessment, the evaluator believes that the project can be completed within the deadline.</p>
Priority Level:	Critical
Responsibility:	SAE-China and UNIDO
Proposed timeframe for implementation:	Immediate

Recommendation #4:	Speed up the process of demonstration work, especially accelerate the implementation of Qingdao demo. SAE-China and UNIDO should supervise the project implementation in a timely manner. Shanghai demo should promote the data connection of the Energy Management Center.
Context/comment:	In the project design, the Yancheng Municipal Bureau of Industry and Information Technology expressed its willingness to actively participate in the pilots of the project, so it was included in the project demos. However, after the project was launched, due to the adjustment of the director of the bureau, its willingness to participate in the project decreased, causing the stagnation of the Yancheng demo. In order to ensure the completion of the task, the activities originally scheduled to be carried out in Yancheng were transferred to Qingdao; Shanghai demo is a highlight. 90% of its targets have been completed, which exceeds the expectations. Several successful demonstrations such as PV storage-charging-inspection smart micro-grid, electric bus rental, electric car sharing, V2G micro-grid, etc. were carried out with significant effect. An energy management center has been established. But only two demo projects have been connected to it. Other demo projects have not yet been connected due to different data collection standards and technologies.
Priority Level:	Critical
Responsibility:	SAE-China and the demonstration task undertakes
Proposed timeframe for implementation:	Immediate

4.3 Lessons learned

A few lessons have been distilled from the project's experience (see Table 11), which provide valuable food for thought for ongoing and future programme formulation and implementation.

Table 11: List of Lessons within their Context, Priority, and Responsibility

Lesson #1:	The project design is in line with the general direction of energy saving and low carbon development in China, which is the basis for the successful implementation of this project.
Context/comment:	<p>The Chinese government has paid unprecedented attention to response to climate change. In 2020, President Xi pledged that China will aim to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060. China also proposed that by 2030, the proportion of non-fossil energy in primary energy consumption will reach about 25%, and the total installed capacity of wind power and solar power will reach more than 1.2 billion KWh.</p> <p>In line with the green development direction of energy saving, environmental protection and low carbon, the Chinese government attaches great importance to the development of EV and RE industries. Many policy documents and technical specifications supporting the development of the two industries have been</p>

	<p>formed and released, such as the "New Energy Vehicle Industry Development Plan (2021-2035)". Under the guidance of national policies, local governments and enterprises also actively support the development of EV and RE industries. In recent years, although the domestic automobile market has declined, the sales and ownership of electric vehicles have continued to grow rapidly. In addition, China has built the world's largest charging network, laying a good foundation for the project demonstration.</p> <p>Thanks to the above background, the implementation of the project has received great attention from all participants.</p>
Priority Level:	Opportunity for Improvement
Responsibility:	UNIDO, GEF

Lesson #2:	The correct choice of project executors and the project managers play a key role in the smooth implementation of the project.
Context/comment:	<p>The executors of the activities in the project are all authoritative organizations (such as SAE-China, SHFIR), or key enterprises (such as SIAC) in the industry. They not only have abundant reserves of technology and human resources, but also have strong project management experience, which is the basis for the smooth implementation of the project.</p> <p>For example, one of the main reasons for the high-level implementation of various tasks in the Shanghai pilot is that the pilot coordinating agency SIAC's strong organizational capabilities, as well as the ability to integrate resources. SIAC organized a group of enthusiastic persons, especially technical experts to participate in the project, and they deeply participated in the recruitment and implementation of the project.</p> <p>The project managers of the project stakeholders have direct impact on the development of the project. The main reason for the stagnation of Yancheng demo is the replacement of the director of Yancheng Bureau of Industry and Information Technology.</p>
Priority Level:	Opportunity for Improvement
Responsibility:	UNIDO, GEF

Lesson #3:	A well-developed project management organization helps to ensure the project progress.
Context/comment:	<p>At the beginning of the project, a complete organizational structure was established. The PSC was composed of the MIIT, MOF, UNIDO, etc. A PMO was established based on SAE-China. The local PSC has also been organized. This top-down organizational structure allows the smooth promotion of project activities. The information transmission and feedback in the implementation process can be implemented smoothly. All the stakeholders can communicate quickly and effectively, and can correct problems in time. This is the key to the smooth progress of the project.</p>

	<p>During the implementation of the project, the MIIT and MOF, as important members of the PSC, played a great role. But the main departments related to climate change in China such as MEE and NDRC were not involved in the project, which affected the application of project outputs in the country's carbon reduction policies.</p> <p>Though the PMO has been established, there is no staff who only work on this project in PMO. Therefore, it is difficult for the staffs to concentrate on this project, resulting in insufficient tracking and summary of project outputs. For example, in this MTR, it is difficult to provide some materials required in a short time.</p>
Priority Level:	Opportunity for Improvement
Responsibility:	UNIDO and SAE-China

Lesson #4:	Effective project management contributes to the high quality of the project, and the innovative management models, such as project recruitment and implementation before subsidy, have played an important role in the success of the Shanghai demo.
Context/comment:	Shanghai demo is a highlight. Overall, the main experience includes: 1) Through project recruitment, enterprises are attracted to carry out pilot demonstrations. At present, three batches of 16 demonstration projects have been completed, covering EV-RE micro-grid, PV storage-charging integration, V2G, smart charging, electric car sharing, electric bus rental, energy management center, etc. 2) The ratio of co-financing to project funds is required to reach 9:1, showing a significant effect in leveraging funding. Such a high investment willingness of the enterprises also shows the good sustainability of the project. 3) The projects in Shanghai were subsidized after implementation, which guaranteed the projects quality.
Priority Level:	Opportunity for Improvement
Responsibility:	UNIDO and the demonstration task undertakes

Annex 1. Evaluation ToR



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE

Mid-term Review of UNIDO Project: Integrated Adoption of New Energy Vehicles in China

**UNIDO SAP ID: 150157
GEF Project ID: 9226**

May 2020

Table of Contents

I. DESCRIPTION, BACKGROUND, CONTEXT AND OBJECTIVE.....	3
1. Project factsheet	3
2. Project description	4
3. Project background	4
4. Project context	4
5. Project objective.....	5
6. Institutional Arrangement and Coordination	6
7. Budget information	8
Table 1: Financing plan summary	8
Table 2: Financing plan summary	8
Table 3: Co-Financing source breakdown	8
II. PURPOSE AND SCOPE OF THE EVALUATION	9
III. Evaluation criteria and key questions	9
IV. Evaluation approach and methodology	10
V. Time schedule and deliverables	11
VI. Evaluation team composition.....	11
VII. Reporting.....	11
VIII. Quality assurance	12
Annex A: Project results framework.....	13
Annex B: Detailed questions to assess evaluation criteria.....	24
Annex C: Terms of Reference.....	31
Annex D: Mid-term evaluation report outline	34
Annex E: Checklist on evaluation report quality.....	36

I. DESCRIPTION, BACKGROUND, CONTEXT AND OBJECTIVE

1. Project factsheet¹

Project title	Integrated Adoption of New Energy Vehicles in China
SAP ID	150157
GEF Project ID	9226
Region	China
Country	China
Project donor(s)	GEF
Project implementation start date	11 July 2017
Expected duration	36 months
Expected implementation end date	10 July 2020
Revised Project Implementation end date	31 December 2021
GEF Focal Areas and Operational Project	Climate change
Other executing Partners	Ministry of Industries and Information Technology (MIIT) and Society of Automotive Engineers – China (SAE-China)
Executing partners	UNIDO
UNIDO RBM code	IC31 (RECP & LowCarbonPrd)
Donor funding	8,930,000
Project GEF CEO endorsement / approval date Project GEF CEO endorsement / approval date	11 April 2017
UNIDO input (in kind, USD)	500,000 Cash and In-Kind
Co-financing at CEO Endorsement, as applicable	Yancheng Municipal State-Owned Asset Investment Group US\$ 30,300,000 grants and in-kind Yancheng Oriental Investment and Development Group US\$ 30,000,000 grants and in-kind Shanghai International Automobile City Company US\$ 55,000,000 grants and in-kind Society for Automotive Engineers (SAE) China US\$ 1,200,000 <u>in-kind</u>
Total project costTotal project cost (USD)	US\$ 117,000,000
Mid-term review date	June 2020
Planned terminal evaluation date	November 2021

(Source: Project document)

¹ Data to be validated by the Contractor

2. Project description

The Project has two main types of demonstrations promoting the development of EV-RE integration in China: (1) integration of EVs with the power grid as a foundation for future scale-up of EV-RE integration, allowing greater incorporation of intermittent RE into the grid and (2) EV-RE micro-grids. In addition, co-financing supports (3) scale-up and increase concentration of charging infrastructure and EVs and can also serve as a foundation for future scale-up of EV-RE integration.

Demonstration cities are Yancheng in Jiangsu Province and Shanghai, China. Yancheng is known for its rich wind resources, which continues to be extensively developed via the construction of wind farms on land. The city also has plans in the pipeline for the development of offshore wind farms and fairly strong solar resources. The Yancheng Municipal Government is putting strong effort into the development of “*new energy vehicle*” (NEVs), and developing a “NEV Park” for relevant manufacturing companies within its Yancheng Economic and Technological Development Zone.

Shanghai is known for being a leader in the auto industry, leads the country in its electric vehicle fleet, and has the most comprehensive system in the country for tracking EV activity. In addition, Shanghai has fairly strong solar resources. Shanghai has strong daily variation in electric power load, with a very large gap within each 24-hour period between peak and minimum power consumption. Further, prices for peak and off-peak electricity in China are already differentiated. This makes it a good candidate for eventual large-scale use of smart charging, in which EVs charge at times of day when demand from other loads is low and excess power supply is high.

3. Project background

In 2017, the transportation sector contributed to 24% of the direct CO₂ emissions with road vehicles (cars, trucks, buses and two-wheelers) accounting for 77% of the emissions attributable to the transport sector. To meet the objectives of the Paris Agreement and the 2030 development agenda, direct transport emissions must peak around 2020 and subsequently decrease by over 9% by 2030. Addressing GHG emissions from the transport sector is also a critical challenge at the national and subnational level. Currently 55% of the global population is living in urban areas, and this percentage is expected to reach 68% by 2050, with 90% of this growth happening in Asia and Africa. Proper planning and policy at the local level is necessary to enable the adoption of low carbon transport vehicles and infrastructure that supports their use.

By December 2018, the global sale of electric vehicles was about 2.1% of global vehicle sales with about 5 million cars now in the market in various countries. This number must reach at least 30% by 2030 and close to 80% adoption by 2050 in order to ensure the transport sector contributes to decarbonization of the global economy. Coupled with new, low-carbon sources of renewable energy, electric vehicles (EVs) are both efficient, low-carbon, and can improve grid reliability.

Within the 6th replenishment cycle of the Global Environment Facility (GEF), UNIDO is implementing programmes promoting electric mobility in China. Over the past year, demand on similar programmes from other member states is rising.

4. Project context

The Integrated Adoption of New Energy Vehicles (NEV) in China (EV-RE integration) project aims to mitigate GHG emissions in China’s mobility and transportation sector. The project made accomplishments in the national level provided a profound research foundation to the government to release policy at the national level broke through the barriers for EV-RE integration in China.

In the year of 2019, the production and sales of China NEV are 1242000 and 1206000, respectively. Among them, 1.02 million electric vehicles have been produced, with year on year growth of 3.4%, sales of electric vehicles reached 972000. The production and sales of plug-in hybrid vehicles are 220000 and 232000 respectively; the production and sales of fuel cell vehicles are 2833 and 2737 respectively, increased 85.5% and 79.2% compared year on year. In 2019, new energy vehicles are affected by the decline of subsidies, and showed a decline in the second half of the year.

According to *Notice on Further Improving Financial Subsidy Policy for Promotion and Application of New Energy Vehicles* in 2019, from June 26, 2019, the national subsidy for new energy vehicles will be reduced by about 50%, and the local subsidy will be directly withdrawn, the policy is aimed to lead the NEV market from policy driven to market driven, and to improve the key technology of NEV. However, the sales of new energy vehicles in 2019 exceeded 1.2 million, the sales in November and December has returned to the average level before the subsidy recession, which shows that the impact of the policy is gradually recovering. Moreover, Minister of the Ministry of Industry and Information Technology, made it clear that the subsidy policy for NEV in 2020 will remain relatively stable and will not decline significantly. In addition, recently, more than 22 provinces and cities across the country have issued policies to promote new energy vehicles, they will continue to increase the construction of charging piles, charging stations and other infrastructure, and encourage large-scale use of new energy vehicles in public transport, car hailing, government departments and other fields. New energy vehicles will continue to expand, and the sales volume is expected to continue to improve.

In terms of charging piles, China's charging infrastructure policy system has been basically built. All ministries and commissions of the central government and local governments have worked together to create a good foundation for the development of charging infrastructure. As of December 2019, the total number of public and private charging piles in China reached 1219000, with an increase of 50.8% year on year. As of December 2019, the total number of battery swapping stations in China reached 306.

For renewable energy, by the end of 2019, the installed capacity of renewable energy power generation in China has reached 794 million kilowatts, with an increase of 9% year-on-year, accounts for 39.5% of the total installed capacity. Among which, hydropower increased 4.17 million kilowatts of installed capacity, with an accumulated installed capacity of 356 million kilowatts, increased 1.1% compared to last year. The total installed capacity of wind power in China had reached 210 million kilowatts, a year-on-year increase of 14.0%, including 204 million kilowatts of onshore wind power and 5.93 million kilowatts of offshore wind power. Cumulative installed capacity of solar power generation exceeded 200 million kilowatts, with cumulative installed capacity reaching 204 million kilowatts, a year-on-year increase of 17.3%. Among them, 17.91 million kilowatts were centralized photovoltaic and 12.2 million kilowatts for distributed photovoltaic. The total installed capacity of biomass power generation reached 22.54 million kilowatts, with a year-on-year increase of 26.6%.

5. Project objective

The “Integrated adoption of New Energy Vehicles in China Project” develops policy recommendations, technical standards, and plans at the national and local levels to promote the integration of electric vehicles with renewable energy. It also increases awareness, the knowledge base, and capacity of national and local level Chinese government officials in areas related to the integration of electric vehicles and renewable energy. Moreover, it demonstrates and test various technical and commercial aspects related to the integration of electric vehicles with renewable energy in the cities of Yancheng and Shanghai. Lastly, the project raises awareness and knowledge of electric vehicles and renewable energy integration amongst both industry and consumers.

The project aims to facilitate and scale up the integration of renewable energy with electric vehicles in China, with the objective of reducing GHG emissions in the country. The outcomes envisaged at the end of the project are:

Component 1 – Policies and Programs

Outcome: Drafted and recommended policies, technical standards, and guidelines that provide regulatory and planning elements, leading to the higher adoption of EV-RE integration schemes by city governments, vehicle manufacturers, and consumers, thus resulting in GHG emission reductions

Component 2 – Government Institutional Capacity Building

Outcome: Increased institutional capabilities and awareness of policymakers at national and local levels

Component 3 – Piloting of Technical Measures and Commercialization Approaches (Project Demos)

Outcome: Two city- scale projects piloted, demonstrating the integration of EVs and RE, as well as other foundational work needed to achieve large-scale EV-RE integration

Component 4 – Awareness Raising and Dissemination amongst Manufacturers, Suppliers, and Consumers
Outcome: Increased knowledge and capacity of business and consumer stakeholders, facilitating awareness, research and development, manufacture, operation, and maintenance with regard to EV-RE integration

Component 5 – Monitoring and Evaluation (M&E)

Outcome: A robust mechanism for M&E in place to ensure the attainment of project outcomes

Project implementation arrangements

A Project Management Unit (PMU) is being established to oversee implementation of all five workstreams. The PMU is being supported by UNIDO through coordination activities and the gender and communications activities that cut across the project.

6. Institutional Arrangement and Coordination

UNIDO is entrusted by the Government of China and by the GEF with the mandate to implement the project to achieve its objective, its outcomes and outputs and within its budget and time frame as approved in this project document. UNIDO is accountable to the GEF for the funds of this project and will in close consultation with MIIT; implement the project according to the established UNIDO's rules and regulations, the applicable GEF requirements, and the Ministry of Finance "GEF Grant Project Management Approach" Notice No. 45 from 26 June 2007. This means that UNIDO maintains the oversight on the project implementation, including supervision of the execution of key activities, as well as organize planned evaluations.

Overall responsibility for project execution lies with the MIIT. The SAE-China, and the City Governments of Yancheng and Shanghai have specific responsibility at national level for executing activities within the current UNIDO/GEF project.

The relationship between the MIIT, UNIDO and the Ministry of Finance (MoF) in China as the supervisory national body for GEF projects is outlined in a set of project agreements. This includes an implementation agreement between MoF and UNIDO, an execution agreement between MIIT and UNIDO, and project agreement between SAE-China and UNIDO.

Coordination among Government agencies and the implementing agency is achieved through a Project Steering Committee (PSC), which is chaired, by MIIT and UNIDO. The PSC provides necessary guidance and oversight on the project's execution and invites members and experts for specific meetings, as needed. The PSC meeting is held once every year.

The PSC is expected to deal with the coordination of various aspects of project activities, including all execution, and its planning. The PSC functions not only to coordinate the project execution, but also acts as a discussion forum for proposed activities, policies and initiatives.

The proposed members of the PSC are

- Ministry of Industries and Information Technology of China as executing agency
- Ministry of Science and Technology
- National Development and Reform Commission
- National Energy Administration
- Ministry of Finance, as the GEF Operational Focal Point
- UNIDO as implementing agency

The PSC is responsible for:

- Coordinating and managing the overall project activities at a macro level.
- Facilitating coordination of project activities across institutions.
- Reviewing project activities and their adherence to the work plan set forth in the project document in line with the GEF regulations on major and minor amendments.
- Reviewing and commenting on each year's proposed work plan and budget.

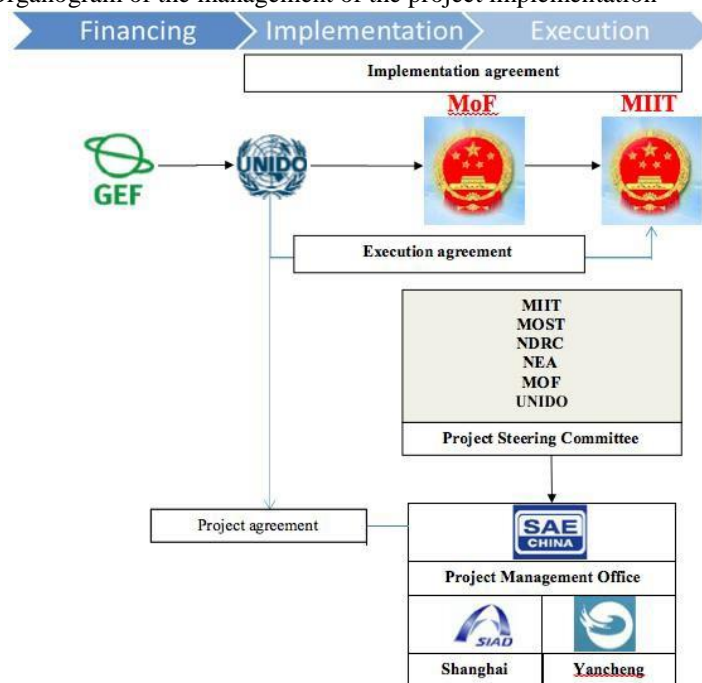
- The PSC is responsible to request and review financial and progress reports.
- Taking decisions on the issues brought to its notice by UNIDO and other cooperating institutions and advice regarding efficient and timely execution of the project.
- Initiating remedial action to remove impediments in the progress of project activities that were not envisaged earlier.

UNIDO's role in the PSC is to provide supervision and technical support. The UNIDO Project Manager (PM) facilitates the work of the Project Management Office (PMO) in co-ordination and networking with other related initiatives and institutions in the country. UNIDO fulfills this responsibility by appointing a Project Manager and mobilizing services of its other technical, administrative and financial branches at UNIDO Headquarters and at the UNIDO Regional Office in Beijing. In the context of technical cooperation, UNIDO's support of the execution function is provided the project with knowledge transfer, technical expertise and experiences gained in other countries, and a global platform for China to showcase its innovation to other countries.

The PMO or a relevant government financial institution maintains an accounting and financial transaction reporting mechanism for the project, and report to the Ministry of Finance and to the PSC. The UNIDO Beijing Office assists with this area of work. The MIIT provides UNIDO with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNIDO (including GEF) funds according to the procedures set out in the UNIDO Operational Guidelines for national execution. These audits are conducted by the legally recognized auditor of the Government, according to the Chinese auditing procedures, or by a commercial auditor engaged by the Government.

It is expected that each set of activities to be implemented in the targeted country is governed by the provisions of the Standard Basic Cooperation Agreement concluded between the Government of China and UNIDO, which was signed on 29 June 1979 and entered into force on 24 June 1985.

Organogram of the management of the project implementation



7. Budget information

Table 1: Financing plan summary¹

\$	Project Preparation	Project ²	Total (\$)
Financing (GEF / others)		8,930,000	8,930,000
Co-financing (Cash and In-kind)		117,000,000	117,000,000
Total (\$)		125,930,000	125,930,000

Source: Project document

Table 2: Financing plan summary²

Grant overview of 2017 - 2020				
Grant 2000003688	Outputs	Total Budget	Obligations	Funds Available
150157-1-06-01	Policies and Programmes	1,475,000.00	1,177,830.44	297,169.56
150157-1-06-02	Institutional Capacity Building	880,000.00	724,300.00	155,700.00
150157-1-06-03	Piloting Technical and commercialized	4,830,000.00	4,016,741.65	813,258.35
150157-1-06-04	Awareness raising and dissemination	1,000,000.00	250,615.45	749,384.55
150157-1-51-02	Project Management costs	425,000.00	29,312.40	395,687.60
150157-1-53-01	Monitoring and Evaluation	320,000.00	6,314.07	313,685.93
		8,930,000.00	6,205,114.01	2,724,885.99

Table 3: Co-Financing source breakdown¹

Classification	Name of Co-financier (source)	Type	Amount (\$)
National Government	Yancheng Municipal State-Owned Asset Investment Group	Grants	18,180,000
National Government	Yancheng Municipal State-Owned Asset Investment Group	In-kind	12,120,000
Private Sector	Yancheng Oriental Investment and Development Group	Grants	18,000,000
Private Sector	Yancheng Oriental Investment and Development Group	In-kind	12,000,000
Private Sector	Shanghai International Automobile City Company	Grants	33,000,000
Private Sector	Shanghai International Automobile City Company	In-kind	22,000,000
Private Sector	Society for Automotive Engineers (SAE) China	In-kind	1,200,000
GEF Agency	UNIDO	Grants	100,000
GEF Agency	UNIDO	In-kind	400,000
Total Co-financing			117,000,000

¹Source: Project document and UNIDO SAP.

²Source of financial data under Grants 2000003688 UNIDO SAP Financial Reporting Tab.

II. PURPOSE AND SCOPE OF THE EVALUATION

This mid-term review is expected to cover the project activities in the first xxx months of implementation of the project, nationally from June 2020 to November 2021, covering all five technical plus the management components in a balanced manner.

The purpose of the mid-term review (MTR) is to independently assess the project to help UNIDO improve performance and achieve the expected outcomes as foreseen in the project document.

The MTR has the following objectives:

- Assess the project's performance and progress towards the achievement of the expected results.
- Assess remaining barriers in project design, project management and performance of executing partners to identify the necessary changes to set the project on-track to achieve its expected results in time.
- Develop recommendations and a follow-up plan on necessary corrective actions.

The evaluation will mainly focus on the achievement of the expected results indicated in the project logical framework, and in particular on the aspects of relevance, effectiveness in delivery, efficiency, impact, sustainability, management as well as cross-cutting issues such as gender mainstreaming.

The evaluation team (ET) will interview stakeholders in various Government institutions, Ministry of Industry and Information Technologies (MIIT), Ministry of Finance (MOF), China Society for Automotive Engineers (SAE), National Energy Administration (NEA), National Development and Reform Commission (NDRC), Ministry of Science and Technology (MOST), Yancheng Municipal Government Economic and Technological Development Zone Management Agency, Shanghai International Automobile City (SIAC), Shanghai International Automobile City (SIAC), Experts in EVs and RE, including in both technical and policy aspects, Manufacturing companies, including manufacturers of vehicles, manufacturers of charging equipment, and manufacturers of renewable energy equipment, Service providers, including car sharing companies, operators of charging stations, and engineering firms that set up RE micro- grids, The general public including, but not limited to, potential EV purchasers, Civil society organizations, including engineering societies, industrial associations, EV user organizations, and women's organizations, The media and UNIDO in China. The ET will also visit selected interventions if needed in order to showcase the practical outcomes of the project activities.

III. Evaluation criteria and key questions

The following are the key evaluation criteria to be addressed by the MTR.

A	Project design assessment
1	Project design
2	Project results framework/logframe
B	Project performance and progress towards results
1	Relevance
2	Effectiveness and progress towards expected results
3	Efficiency
4	Gender mainstreaming
5	Sustainability
C	Project implementation management
1	Project management
2	Results-based work planning, monitoring and evaluation, reporting
3	Financial management and co-financing
4	Stakeholder engagement and communication
D	Performance of Partners

Detailed evaluation questions to address each of the evaluation criteria are provided in Annex 2.

IV. Evaluation approach and methodology

The MTR will be conducted in accordance with the UNIDO Evaluation Policy³. An independent evaluator will conduct the evaluation and a supporting evaluator using a participatory approach whereby all key parties associated with the project are kept informed and regularly consulted throughout the evaluation. The evaluation team will liaise with the UNIDO Independent Evaluation Division (ODG/EVQ/IEV) on the conduct and methodology of the evaluation.

The evaluation team will be required to use different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources, as necessary: desk studies and literature review, statistical analysis, individual interviews, focus group meetings, surveys and direct observation. This approach will not only enable the evaluation to assess causality through quantitative means but also to provide reasons for why certain results were achieved and to triangulate information for higher reliability of findings.

The evaluation team will develop interview guidelines. Field interviews can take place either in the form of focus-group discussions or one-to-one consultations, and in particular cases may have to be conducted over the phone or by using Skype or zoom as deemed fit by those involved in leading this evaluation.

The methodology will be based on the following:

1) A desk review of project documents, including, but not limited to:

- a. The original project document, monitoring reports, such as progress and financial reports to UNIDO and Donor(s)/Partners, annual Project Implementation Reports (PIRs), back-to-office mission report(s), and other project-related material produced by the project.
- b. The evaluation team will check the validity of the project's results-chain in the project logframe and if necessary advise on amendments to the theory of change for the project.
- c. Counterfactual information: In those cases where baseline information for relevant indicators is not available, the evaluation team will aim at establishing a proxy-baseline through recall and secondary information.

2) Interviews with:

- a. Briefing meetings at UNIDO headquarters in Vienna: Project Manager (PTC/ENE/ESI) and the team members assigned to the project.
- b. Meetings with the MIIT, MOF, SEA, NDRC, NEA, MOST, Yencheng Municipal Government Economic and Technological Development Zone Management Agency, SAIC, etc.
- c. Meetings with the Lead Executing Agencies and with the Members of the Project Steering Committee Chairperson.

3) Country visit: The evaluation team will visit selected sites, as it will be determined in due course. At the end of the field mission, there will be a presentation of preliminary findings, conclusions and recommendations to the key stakeholders.

³ UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M) 98/Rev.1)

V. Time schedule and deliverables

The mid-term evaluation of the Project is to be completed from June to August 2020.

Table 4. Tentative schedule

Activity/deliverable	Indicative timing
Recruitment of the evaluation team	June 2020
Desk review	June 2020
Briefing with UNIDO headquarter (Vienna)	June 2020
Evaluation Framework and Theory of Change of the project intervention	July 2020
Fieldwork in China	July 2020
Debriefing meeting with UNIDO HQ (remotely)	July 2020
Preparation of the first draft of the report	August 2020
Feedback from stakeholders	August 2020
Final Report	August 2020

The debriefing presentation of the evaluation is foreseen to conduct remotely after the field mission. The evaluation report will be in English.

VI. Evaluation team composition

The evaluation team will be composed of the contractors' staff. The evaluation team members will possess relevant strong experience and skills on evaluation management and conduct together with expertise and experience in energy efficiency.

The tasks of contractors' team are specified in the job descriptions annexed to these terms of reference. According to UNIDO Evaluation Policy, members of the evaluation team will be involved in the design and/or implementation of the project under evaluation.

The UNIDO Project Manager and MIIT, SEA will support the evaluation team. The UNIDO GEF Coordinator and GEF OFP(s) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission team. The UNIDO GEF Coordinator and GEF OFP(s) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

The evaluation will be managed and supervised by an evaluation manager appointed by UNIDO ODG/EVQ/IEV. The UNIDO Project Manager and MIIT, SEA will act as resourced persons and provide support to the evaluation team.

VII. Reporting

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the contractor (confirming the designated staff) will prepare the Evaluation Framework and reconstruct how the project Theory of Change will operationalize the ToR relating to the evaluation questions and providing information on what type of, and how the evidence will be collected (methodology). It will be discussed with and approved by the UNIDO Evaluation Manager.

The Evaluation Framework will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an

evaluation framework (“evaluation matrix”); mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable⁴.

Evaluation report format and review procedures

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

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

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

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given in annex 4.

VIII. Quality assurance

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

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as Annex 5. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO ODG/EVQ/IEV should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO’s evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO ODG/EVQ/IEV, which will submit the final report to the GEF Evaluation Office and circulate it within UNIDO together with a management response sheet.

⁴The ET will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO ODG/EVQ/IEV.

ANNEX A: Project results framework

Project Strategy	KPI/ Indicator	Baseline	Target at End of Project	Sources of Verification	Assumptions
Project Objective: Facilitation and scale-up of the integrated development of electric vehicles (EVs) with renewable energy (RE) in China	Direct GHG emissions reduced from integration of EVs with RE and from scale-up of EV use beyond business as usual, based on the project demos (tons CO ₂)	0	25,629	Demo monitoring reports	Sustained and solid support for the project from local partners in Yancheng and Shanghai
	Indirect GHG emissions reduced from integration of EVs with RE and from scale-up of EV use beyond business as usual, based on replication of the project demos (tons CO ₂)	0	62,181	Records of replication cities and original demo cities; energy management centers in replication cities and original demo cities	Strong political support in replication cities and original demo cities for integration of EVs with RE
	Amount of RE used to charge EVs in China via micro-grids and smart charging (both direct via project demos and indirect via replication of demos) (MWh)	0	69,465 ³⁵	Records of replication cities and original demo cities; energy management centers in replication cities and original demo cities	Strong political support in replication cities and original demo cities for integration of EVs with RE
Outcome 1: Drafted and recommended policies, technical standards, and guidelines that provide regulatory and planning elements, leading to the higher adoption of EV-RE integration schemes by city governments, vehicle manufacturers, and consumers, thus resulting in GHG emission reductions	Number of incentive policies or amendments related to EV-RE integration approved or under current active review with high potential for approval at the ministerial level for entry into the policy pipeline. Such incentive policies may include those for: (a) smart charging, (b) V2G, (c) distributed RE for EV charging, (d) grid-based uptake of RE by EVs, and (e) secondary batteries	0	3	Documentation of ministerial level approval of policies or amendments for entry into the policy pipeline	MIIT and/or NDRC receptive to idea of promoting EV-RE integration Sufficient government funding exists to justify pursuit of incentive policies related to EV-RE integration
	Number of different types of standards adopted to facilitate EV-RE integration and scale-up (types to be selected from the following: energy management center standards, technical standards for V2G connection, standards for secondary use of retired EV batteries, technical and safety standards for smart charging systems, standards for mobile charging systems, and	0	6	Listing of standards issued by China's vehicle industry and by China's renewable energy industry	China's vehicle industry and RE industry have strong enough commitment to EV-RE integration to achieve issuance of multiple standards during the three-year lifetime of project

³⁵Demo charging of EVs with REs during project includes power provided to EVs by: (1) Yancheng's Aoxin MicroGrid (1,200,000 kWh), (2) Yancheng's Goldwind Micro-Grid (138,700 kWh), (3) Yancheng's smart charging (assuming the full shift in demand can be supplied by wind power previously in excess, 17,885 MWh), and (4) Shanghai's 10 micro-grids (624,000 kWh). Total for demos during project is: 19,847.0 MWh. Estimated replication in year three of project assumes replication in six new cities (of a scale similar to demo scale in one city) and double original scale replication in the two demo cities. So, this is ten times replication of one city for one year, or five times one demo city over two years and thus 2.5 times the results of our two demo cities over last two years of project: 2.5 x 19,847 MWh = 49,617.5 MWh. And, in total, charging of EVs with RE achieved during the project is 69,464.5 MWh = 19,847.0 MWh (demos) + 49,617.5 MWh (replication).

	standards for distributed RE systems for charging EVs)				
	Number of cities that have officially adopted local EV-RE integration and scale up plans	0	6	Proceedings of city government meetings on EV-RE integration plans in various cities	City governments have fiscal resources to make them confident in ability to adopt EV-RE integration plans
<u>Output 1.1A:</u> National level roadmap to facilitate effective EV-RE integration and scale up that achieves consensus among stakeholders	Number of key ministries providing input to <i>National Roadmap on EV-RE Integration</i>	0	3	Project meeting minutes from one-on-one meetings with relevant officials on the proposed <i>National Roadmap</i>	Key ministries interested enough in EV-RE integration to take time to offer thoughtful input to draft version of <i>National Roadmap on EV-RE Integration</i>
<u>Output 1.1B:</u> Suggested policies and framework that promote balancing of grid load with power generated via utilization of EVs, thus providing a foundation for scale up of EV-RE integration	Number of different key topics covered by proposed policies or amendments submitted to government related to EVs' role in balancing power load with power supply (key topics for which coverage is to be assessed include: smart charging guidelines and incentives, energy management center set-up, V2G power sales to grid, and V2G incentives)	0	4	Project records on official submissions of proposed policies to government	Authorities with relevant purview amenable to receiving policy recommendations in the relatively new area of using EVs to balance grid load with power generated
<u>Output 1.1C:</u> Proposed national-level policies to regulate and incentivize systems for the charging of EVs with RE, including those integrating either RE micro-grids or grid-based large-scale RE installations	Number of different key topics covered by proposed policies submitted to government related to EVs being charged with RE (key topics for which coverage is to be assessed include: guidelines for distributed EV-RE charging systems, incentives for distributed EV-RE charging systems, and incentives for grid-based EV smart charging using RE that would otherwise be curtailed)	0	3	Project records on official submissions of proposed policies to government	Authorities with relevant purview amenable to receiving policy recommendations in the relatively new area of charging EVs with RE
<u>Output 1.1D:</u> Proposed national-level policy instruments to regulate and incentivize use of retired EV batteries, which may play a key role in large-scale EV-RE integration	Number of different key topics covered by proposed policies submitted to government related to use of secondary use of retired EV batteries (key topics for which coverage is to be assessed include: guidelines for use of retired EV batteries and incentives for use of retired batteries)	0	2	Project records on official submissions of proposed policies to government	Authorities whose purview includes regulation and incentives for retired EV batteries amenable to receiving policy recommendations
<u>Output 1.2:</u> Issuance of technical standards and specifications facilitating EV-RE integration and scale up, including those for smart charging systems, vehicle to grid (V2G) systems, mobile charging systems, and use of retired EV batteries	Number of different types of standards proposed by expert standards formulation committees to facilitate EV-RE integration and scale-up (types to be selected from the following: energy management center standards, technical standards for V2G connection, standards for secondary use of retired EV batteries, technical and safety standards for smart charging systems, standards for mobile charging systems, and standards for distributed RE systems for charging EVs)	0	6	Listing of standards issued by China's vehicle industry and by China's renewable energy industry	China's vehicle industry and RE industry have strong enough commitment to EV-RE integration to achieve issuance of multiple standards during the three-year lifetime of project

<u>Output 1.3:</u> Recommendations presented to transport sector	Status of proposal to incorporate charging of EVs with RE into national carbon trading	0	1	Project records on submissions of	Authorities responsible for national carbon trading system amendable to
authorities for incorporation of incentives for EV charging with RE in transport sector national carbon trading policies, including carbon trading rules for EVs powered by RE, to promote greater adoption of RE in the grids supplying electricity to EVs	systems (1= submitted to government, 0=not yet submitted to government)			proposed policies to government	receiving submissions on recommendations for amendments to system
<u>Output 1.4:</u> City-level EV-RE integration and scale up plans, including replication plans for the adoption of best models demonstrated in Shanghai and Yancheng	Number of cities with draft local EV-RE integration and scale up plans	0	6	Proceedings of city government meetings on EV-RE integration plans in various cities	City governments have fiscal resources to make them confident in ability to adopt EV-RE integration plans
<u>Output 1.5:</u> Proposed institutional plan to establish responsibilities of and coordination among various government organizations for EV-RE integration	Number of different ministries reviewing institutional plan	0	3	Project reporting on meetings regarding institutional plan	Government officials willing to meet regarding institutional plan and review materials
Outcome 2: Increased institutional capabilities and awareness of policymakers at national and local levels on the use of integrated EV - SG (Smart Grid) - RE systems	Total number of policymakers reached by project's capacity building and awareness work regarding EV-RE integration	0	100	Attendee lists of all workshops, training programs, and group meetings held under Outcome 2	National and local level government officials receptive enough to idea of EV-RE integration to attend events and be open to one-on-one meetings on the topic
	Total number of cities whose policymakers are reached by project's capacity building and awareness work regarding EV-RE integration	0	30	Attendee lists of all workshops and training programs held under Outcome 2	City level officials receptive enough to idea of EV-RE integration to attend project training program or other relevant events
	Number of cities that indicate they have a strong interest in learning more about and carrying out EV-RE integration work as a result of project outreach	0	10	Survey of cities reached under Component 2 as conducted under Activity 5.2.1	Priorities of their cities make city level officials receptive enough to EV-RE integration concept to want to invest more time in learning more
<u>Output 2.1:</u> Training program for 100 city-level policy makers on EV-RE integration policies and demonstration experience	Number of government officials attending EV-RE integration training program that pass test on mastery of materials given at end of program	0	80	Results of test prepared under Activity 2.1.1 and administered under Activity 2.1.2	Government officials attending training program have enough background to master program content
	Proportion of women among training program attendees	Not applicable	35%	Training program attendee list	Government organizations become onboard with working to achieve higher proportion of women attendees than is typical

Output 2.2: Four workshops conducted to validate the EV-RE integration policy and planning framework	Number of workshops at which strong consensus is achieved for proposed policy, standards, trading system, or roadmap	0	4	Four surveys conducted as part of Activities 2.2.1, 2.2.2, and 2.2.3	Attendees of workshops have strong enough policy backgrounds to provide useful input on proposed policy instruments
	Proportion of women among attendees of all four policy and planning workshops	Not applicable	35%	Workshop attendee list	Government organizations become onboard with working to achieve higher proportion of women attendees than is typical
Output 2.3: International forums with participants from central government agencies and EV demonstration cities that disseminate international developments in and plans for EV-RE integration	Number of country case studies included in report on international developments in EV-RE integration	0	5	Project study on international developments and plans in EV-RE integration	International developments in EV-RE integration are advanced enough to warrant in-depth case studies
	Number of distinct Chinese government officials attending one or both of the two forums on international developments in EV-RE integration	0	30	Attendee list of project's two international forums	National and local-level government officials develop enough interest in EV-RE integration topic to attend the international forums
	Proportion of women among all attendees of the international forums	Not applicable	35%		Attending organizations become onboard with working to achieve higher proportion of women attendees than is typical
Output 2.4: Written materials on EV-RE integration strategically disseminated to policy makers	Number of government officials that are confirmed to have reviewed briefing materials	0	30	Project team follow up with government officials (or their team members) that received hard copy briefing materials from project	Government officials become interested in the topic of EV-RE integration once presented with materials and background explanation
	Number of categories of items included in online information base (possible categories include: policy briefings, international study, demo reports, roadmaps, policies/ regulations, standards)	0	6	Project's online information base	
Outcome 3: Two city-scale projects piloted, demonstrating the integration of EVs and RE, as well as other foundational work needed to achieve large-scale EV-RE integration	Amount of renewable energy uptake by EVs in project demo micro-grids (kWh)	0	2,101 MWh = 2y x (600/y @ Aoxin + 138.7/y @ Goldwind + 312/y @ SIAC)	Project monitoring report on RE micro-grid demos	Capacity strong enough so that RE micro-grid demos are up and running and supplying RE to EVs at scale by end of year 1 of project implementation
	Amount of energy shifted by smart charging of project demos to reduce peaks and valleys of grid demand (kWh)	0	20,075 MWh = 17,885 Yancheng + 2,190 Shanghai (for two year period)	Project monitoring report on smart charging aspect of demos	Capacity strong enough so that smart charging aspect of demos is up and running at scale by end of year 1 of project implementation
	Amount of energy stored and returned annually to micro-grids by retired EV battery banks	0	819,936 KWh = 2y x (166,090/y @ Aoxin + 33,638/y @ Goldwind + 210,240/y @ SIAC)	Project monitoring report on micro-grids (stationary retired EV battery banks aspect)	Capacity strong enough so that RE micro-grid demos are up and running with retired EV battery banks fully operations by end of year 1 of project implementation
Output 3.1: Demonstration of integration of EVs with the power grid, needed as basis for	Number of (a1) smart charging devices and (b) electric vehicles successfully participating in smart charging system in Yancheng,	(a1) 0 (b1) 0 (b2) 0	(a1) 1,000 (b1) 700 (b2) 50	Project monitoring report on Yancheng's smart charging demo	Capacity strong enough so that smart charging demo successfully implemented in Yancheng

EVs eventually to address intermittency issues of large-scale RE power incorporation into the grid	including: (b1) trucks, (b2) taxis, (b3) buses, (b4) fleet sedans, and (b5) private or rental sedans	(b3) 0 (b4) 0 (b5) 0	(b3) 10 (b4) 100 (b5) 140		
	Number of (a2) smart charging devices and (b)	(a2) 0	(a2) 200	Project monitoring	Capacity strong enough so that
	electric vehicles successfully participating on a daily basis in smart charging system in Shanghai, including: (b6) hourly car sharing sedans	(b6) 0	(b6) 200 (daily average)	report on demo of smart charging in Shanghai	smart charging demo successfully implemented in Shanghai
<u>Output 3.2A:</u> Demonstration of integration of EVs into RE micro-grids, including demonstration of micro-grids incorporating wind, PV, use of retired EV batteries as storage, EVs, and buildings and a manufacturing facility	Number of EVs powered mainly by RE micro-grid demos in Yancheng	0	87 (Aoxin Micro Grid: 77 = 57 trucks + 20 sedans, there will be 3 additional trucks, but RE power is just about enough for the 77 rather than 80 vehicles; Goldwind Micro-Grid: 10 sedans)	Project monitoring report on Yancheng's micro-grids	Capacity strong enough so that RE micro-grid demos are up and running during project and charging the targeted number of vehicles
	Number of EVs powered mainly by RE micro-grid demo in Shanghai	0	90	Project monitoring report on Shanghai's micro-grids	
<u>Output 3.2B:</u> Demonstration of V2G technologies and pilot commercial systems enabling EVs (or retired EV battery packs) to send power back to the micro-grid at times that it is needed	Number of electric vehicles successfully participating in demonstration of micro-grid connected V2G system in Yancheng	0	10	Project monitoring report on Yancheng's Aoxin Micro-Grid (V2G aspect)	Capacity strong enough so that V2G demo in Yancheng is up and successfully running by end of first year of project implementation
	Amount of energy sent to the grid via V2G of Yancheng micro-grid (kWh)	0	48,180 kWh (assumes V2G demo operational for two years)		
	Number of electric vehicles successfully participating in demonstration of micro-grid connected V2G system in Shanghai	0	5	Project monitoring report on Shanghai's micro-grids (V2G aspect)	Capacity strong enough so that V2G demo in Shanghai is up and successfully running by end of first year of project implementation
	Amount of energy sent to the grid via V2G of Shanghai micro-grid (kWh)	0	22,886 kWh (assumes V2G demo operational for two years)		
<u>Output 3.3A:</u> Demonstration of greater density of the EV stationary charging network, thus serving as a basis for scale-up of EV-RE integration	Number of stationary EV charging poles of EVCARD business in Shanghai	4,000	16,000	Project monitoring report on scale-up aspects of project demos	Full targeted co-financing realized in Shanghai and applied to scale-up of EVCARD business as planned

Output 3.3B: Demonstration of alternatives to stationary charging stations, in particular mobile charging station vehicles, to deal with emergency needs for charging, thus increasing the feasibility of EV use and thereby supporting the scale-up of EV-RE integration	Mobile charging stations circulating on daily basis in Yancheng	0	3	Project monitoring report on mobile charging station vehicle	Viable model for mobile charging station vehicle developed
	Total number of retired EV battery packs used on mobile charging stations on daily basis in Yancheng	0	36		
Output 3.3C: Demonstration of business models to scale-up the number of EVs, thus laying the ground work to realize the benefits of EV-RE integration on substantial scale	Number of hourly car rental (“car sharing”) passenger vehicles in Shanghai’s EVCARD fleet	1,600	8,000	Project monitoring report on scale-up aspects of project demos	Full targeted co-financing realized in Shanghai and applied to scale-up of EVCARD and E-drive business as planned
	Number of pure electric buses in E-drive’s rental fleet	50	200		
Output 3.4: Demonstration of energy management centers that collect and manage data on dispersed EVs and retired EV battery packs used as storage for the grid, so that the charge and discharge of these devices can be managed	Number of vehicles receiving commands from Yancheng’s energy management center on an ongoing basis that control their charging times (and discharging times, if relevant) including: (b1) trucks, (b2) taxis, (b3) buses, (b4) fleet sedans, and (b5) private or rental sedans <i>(Note: Likely to be similar to Yancheng indicator values for outcome 3.1A, except that 10 V2G vehicles are added)</i>	(b1) 0 (b2) 0 (b3) 0 (b4) 0 (b5) 0	(b1) 700 (b2) 50 (b3) 10 (b4) 110 (b5) 140	Records and data from Yancheng Energy Management Center	Co-financed scale-up of vehicles in Yancheng achieved, with all 1,000 vehicles incorporated into smart charging system
	Number of vehicles receiving commands from Shanghai’s energy management center on an ongoing basis that control their charging times (and discharging times, if relevant), including: (b6) hourly car sharing sedans	(b6) 0	(b6) 205	Records and data from Shanghai Energy Management Center	Successful implementation of smart charging system and V2G in Shanghai
Output 3.5A: Detailed monitoring and assessment of project demos of EV integration with the power grid	Number of areas in which EV integration with power grid demo data and information on experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) smart charging and (2) energy management centers)	0	2	Project reports assessing EV integration with power grid demo results	Capacity of personnel involved in analysis work high enough to generate useful and analytic insights based on data and information collected from the project EV power grid integration demos
	Number of smart charging poles in Yancheng for which data is collected and assessed for 2 years	0	1,000	Yancheng Energy Management Center data reports	Energy Management Centers achieve high quality data collection, enabling analysis work
	Number of smart charging poles in Shanghai for which data is collected and assessed for 2 years	0	200	Shanghai Energy Management Center data reports	

Output 3.5B: Detailed monitoring and assessment of project demos of RE-EV micro-grids	<p>Number of areas in which EV-RE micro-grid demo data and information on demo experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) EV-RE micro-grid generally and (2) V2G in RE micro-grid)</p> <p>Number of regular micro-grid charging poles and number of V2G charging poles in Yancheng for which data is collected and assessed for 2 years (number of regular poles, number of V2G poles)</p> <p>Number of regular micro-grid charging poles and number of V2G charging poles in Shanghai for which data is collected and assessed for 2 years (number of regular poles, number of V2G poles)</p>	<p>0</p> <p>regular: 0 V2G: 0</p> <p>regular: 0 V2G: 0</p>	<p>2</p> <p>regular: 80 V2G: 10</p> <p>regular: 85 V2G: 5</p>	<p>Project reports assessing micro-grid demo results</p> <p>Yancheng Energy Management Center data reports</p> <p>Shanghai Energy Management Center data reports</p>	<p>Capacity of personnel involved in analysis work high enough to generate useful and analytic insights based on data and information collected from the project EV-RE micro-grid demos</p> <p>Energy Management Centers achieve high quality data collection, enabling analysis work</p>
Output 3.5C: Detailed monitoring and assessment of aspects of project demos related to the use of retired EV batteries, including development of know-how with regard to use of retired EV batteries so that they can be leveraged as tools of EV-RE integration	<p>Number of areas in which retired EV battery demo data and information on demo experience is collected, assessed, and reported with recommendations. (Areas to be covered include: (1) retired EV battery packs in RE micro-grid, (2) retired EV battery packs in mobile charging station vehicles, and (3) other testing of retired EV batteries)</p> <p>Number of retired EV battery packs utilized in the project demos for which data is included in the safety database and associated assessment</p> <p>Number of key technical topics covered in retired EV battery guidelines (possible key topics include: maintenance, repair, and refurbishment).</p> <p>Number of key battery chemistries covered in technical and economic evaluation of use of retired EV batteries</p>	<p>0</p> <p>0</p> <p>0</p> <p>0</p>	<p>3</p> <p>291</p> <p>3</p> <p>3</p>	<p>Project reports assessing demo results related to retired EV batteries</p> <p>Yancheng Energy Management Center data reports</p> <p>Shanghai Energy Management Center data reports</p> <p>Project developed retired EV battery performance database</p> <p>Project developed guidelines for use of retired EV batteries</p> <p>Project report on technical and economic evaluation of retired EV battery use</p>	<p>Capacity of personnel involved in analysis work high enough to generate useful and analytic insights based on data and information collected from the project demos' use of retired EV batteries</p> <p>Project demo aspects involving retired EV battery packs successfully provide data accessed via project-established energy management centers</p> <p>Technical capacity exists to develop strong technical guidelines on use of retired EV batteries</p> <p>Initial findings of technical work imply merit in covering at least three battery chemistries in technical and economic evaluation</p>
Output 3.5D: Detailed monitoring and assessment of aspects of project demos related to scale-up and increased concentration of China's EV	Number of areas of scale-up and increased concentration in which demo data and information on demo experience is collected, assessed including business feasibility assessment, and reported with	0	4	Project reports assessing demo results	Capacity of personnel involved in analysis work high enough to generate useful and analytic insights based on data and information collected from project demos

fleet and charging infrastructure	<p>recommendations. (Areas and to be covered include: (1) mobile charging station vehicles generally (Yancheng), (2) increased density of network of stationary charging poles (Shanghai), (3) car sharing EV scale up (Shanghai), and (4) EV rental bus scale up (Shanghai))</p> <p>Number of mobile charging stations for which general operational data is collected and assessed for 2 years</p>	0	3	Accounting profit-loss statements of entities operating mobile charging stations vehicles, fixed location charging poles, and car sharing and bus rental business	<p>aspects related to scale up and increased concentration of vehicles and charging infrastructure</p> <p>Involved entities are willing to share profit and loss data on relevant charging, car sharing, and bus rental initiatives.</p>
Outcome 4: Increased knowledge and capacity of business and consumer stakeholders, facilitating awareness, research and development, manufacture, operation, and maintenance with regard to EV-RE integration	Estimated number of consumers/ the public reached by all forms of project outreach on EV-RE integration	0	8 million	Project collected data on viewership of documentary and radio program audiences, as well as estimates of readership of EV-RE articles in the press and viewers of social media campaign	Consumers attracted to view / listen to programs on RE-EV and to read articles on this topic in the press and on social media
	Estimated total number of companies reached by all forms of project outreach on EV-RE integration	0	60	Attendee information of project meetings and workshops; listing of membership of EV-RE Alliance; listing of companies receiving project briefing materials	Companies find EV-RE integration, once explained to them, to be an attractive area worth further study
	Number of companies deciding to dedicate greater effort to the EV-RE area as a result of project outreach	0	15	Project survey conducted under Activity 5.2.2	Companies find EV-RE integration fits with their strategy for the future
<u>Output 4.1A:</u> Forums for industry, including both domestic and international players active in the China market in the vehicle, power, and other related sectors, on EV-RE business models, technology, and demonstration results	Number of distinct industrial companies related to EVs, power, or RE attending at least one of project's forums	0	30	Attendee lists from project's forums for industry	<p>Players active in the China market and the vehicle, power, and other related sectors find that forum attendance fits with their business objectives</p> <p>Attending organizations become onboard with idea to increase proportion of women attendees</p>
	Proportion of attendees at forums for industry that are women	Not applicable	35%		
<u>Output 4.1B:</u> Dissemination to industry of project's EV-RE information base	Number of industrial organizations that receive project's EV-RE information base materials and find them useful in their business plans	0	10	Survey carried out under Activity 5.2.2	EV-RE integration is found by businesses to fit with their strategies and plans

<u>Output 4.1C:</u> Meetings publicizing EV-RE related technical standards, held for vehicle OEMs, charging equipment suppliers, and other related industrial companies	Number of persons attending meetings that do well enough on end of meeting test to confirm acceptable grasp of materials presented	0	60	Results of test designed and carried out under Activity 4.1C.1	Attendees have enough basic knowledge to be able to grasp concepts presented at standards meetings
	Proportion of attendees at standards meetings that are women	Not applicable	35%	Attendee lists from standards meetings	Attending organizations become onboard with idea to increase proportion of women attendees
<u>Output 4.1D:</u> Technical operation and maintenance workshops related to EV-RE integration aspects held for relevant industrial organizations	Number of persons attending meetings that do well enough on end of meeting test to confirm acceptable grasp of materials presented.	0	50	Results of test designed and carried out under Activity 4.1D.1	Attendees have enough basic knowledge to be able to grasp concepts presented at O&M workshops
	Proportion of women attendees at O&M workshops	Not applicable	35%	Attendee lists from O&M workshops	Attending organizations become onboard with idea to increase proportion of women attendees
<u>Output 4.1E:</u> Establishment of industry alliance or association subcommittee for promoting and advancing EV-RE integration and liaising with government on EV-RE integration policy	Number of distinct companies that join the industry alliance set up by the project to advance EV-RE integration	0	12	Membership roster of industry alliance set up under project	Potential member companies find EV-RE integration topic pertinent to their long-term strategy
<u>Output 4.2:</u> Awareness raised among current and future potential car sharing companies of various car sharing business models and integration of EVs with RE in car sharing businesses	Number of existing car sharing business entities participating in project exchange workshop	0	15	Project records on attendees at car sharing exchange workshop	Car sharing businesses attracted to opportunity to learn more about EV-RE integration and share their experience to date in the car sharing business
	Number of entities interested in newly entering the car sharing business participating in project exchange workshop	0	15		Companies not yet involved in car sharing find that EV car sharing business to be an attractive opportunity worth exploring
<u>Output 4.3A:</u> Media promotion of EV-RE integration, raising awareness of the public regarding the need to incorporate RE into EV development to realize the environmental potential of EVs and educating the public on various aspects of EV-RE integration	Number of viewers of documentary film on EV-RE integration	0	50,000	Data on events at which documentary is aired	Event organizers, print and online journalists, and radio stations are convinced of attractiveness and/or meaningfulness of covering the story of EV-RE integration
	Number of news articles (print media or online news) in Chinese press on EV-RE integration	0	30	Data on hits of website link to documentary File of news articles collected by project team	
	Number of radio listeners exposed to EV-RE integration via project's radio campaign	0	1 million	Data on Chinese radio audience size	

	Number of special strategies or measures adopted in media EV-RE integration outreach that specifically target the interests and concerns of women	0	3	Project reports	
Output 4.3B: Promotion of EV-RE integration to consumers via social organizations, increasing consumers' understanding of and attraction to the concept and related opportunities	Increase in membership of EV clubs targeted by project (number of new members)	0	200 (=100 in Yancheng and 100 in Shanghai)	Project records of membership growth of pre-existing EV clubs	Measures taken to improve attractiveness of clubs attract more consumers to join
	Number of persons exposed to EV-RE integration concepts via EV social clubs	0	500	Project records of attendance at EV-RE integration discussion meetings held by EV clubs	EV club members interested in potential of EVs to address problems related to energy and the environment
	Number of women's organizations and number of women reached by project's special outreach to women's organizations to promote EV-RE to them	0 organizations 0 women	8 organizations 400 women	Project records of attendance at EV-RE integration events for women's organizations	Women's organizations receptive to idea of EV-RE integration being explained and promoted at their events or at special events for their organization
Output 4.3C: Outreach on social media platforms and cooperation with social media companies to carry out promotion of EV-RE integration	Number of social media platforms on which the project's social media outreach campaign generates ongoing discussion regarding EV-RE integration	0	3	Project records on results of Activity 4.3C.2	Users of social media platforms receptive to well-designed outreach campaign on EV-RE integration
	Number of special strategies or measures adopted in social media EV-RE integration outreach that specifically target the interests and concerns of women	0	2		
Output 4.4: An EV-RE integration demonstration center in Yancheng, created to raise awareness on the topic of EV-RE integration amongst consumers, companies using EVs, and industries related to RE or EV	Number of Chinese government officials that have visited EV-RE integration demonstration center in Yancheng	0	200	Records of Yancheng	Government officials respond positively to invitations to visit the Demonstration Center
	Total number of persons that have visited EV-RE integration demonstration center in Yancheng	0	2,000	EV-RE Integration Demonstration Center	Other experts and the general public are attracted by the opportunity to visit the demonstration center
Environmental and Social Management Plan (ESMP) indicators not included elsewhere	Proportion of international consultant person days performed by women	Not applicable	35%	Project contracts	Qualified women candidates apply for project opportunities
	Proportion of domestic consultant person days performed by women	Not applicable	35%	Project contracts	Qualified women candidates apply for project opportunities
	Proportion of new or upgraded charging poles in project demos that are monitored for safety in construction and operation.	Not applicable	100%	Report prepared as a part of Activity 5.2.3.	Personnel with electrical safety expertise available to participate in project.
	Number of incidents of noncompliance with safety standards in construction or number of safety incidents with regard to project's charging poles or EV-RE mini-grids	Not applicable	0	Report prepared as a part of Activity 5.2.3.	Personnel with electrical safety expertise available to participate in project.

	Number of battery packs or batteries that are part of project that are not disposed of properly	Not applicable	0	Battery tracking system prepared as part of Activity 5.2.4.	Recycling capacity exists for those batteries that are no longer useful for secondary use or for those which secondary use market is not large enough to absorb.
--	---	----------------	---	---	--

Annex B: Detailed questions to assess evaluation criteria

The evaluation team will assess the project performance guided by the questions below.

#	Evaluation criteria
A	Project design assessment
1	<p>Project design</p> <p>The project design was adequate to address the problems at hand?</p> <p>Is the project consistent with the Country's priorities, in the work plan of the lead national counterpart? Does it meet the needs of the target group? Is it consistent with UNIDO's Inclusive and Sustainable Industrial Development? Does it adequately reflect lessons learnt from past projects? Is it in line with the donor's priorities and policies?</p> <p>Is the applied project approach sound and appropriate? Is the design technically feasible and based on best practices? Does UNIDO have in-house technical expertise and experience for this type of intervention?</p> <p>To what extent the project design (in terms of funding, institutional arrangement, implementation arrangements...) as foreseen in the project document still valid and relevant?</p> <p>Does the project document include a M&E plan? Does the M&E plan specify what, who and how frequent monitoring, review, evaluations and data collection will take place? Does it allocate budget for each exercise? Is the M&E budget adequately allocated (see a M&E sample) and consistent with the logframe (especially indicators and sources of verification)?</p> <p>Risk management: Are critical risks related to financial, social-political, institutional, environmental and implementation aspects identified with specific risk ratings? Are their mitigation measures identified? Where possible, are the mitigation measures included in project activities/outputs and monitored under the M&E plan?</p>
2	<p>Project results framework/logframe</p> <p>Expected results: Is the expected result-chain (impact, outcomes and outputs) clear and logical? Does impact describe a desired long-term benefit to a society or community (not as a mean or process), do outcomes describe change in target group's behaviour/performance or system/institutional performance, do outputs describe deliverables that project will produce to achieve outcomes? Are the expected results realistic, measurable and not a reformulation or summary of lower level results? Do outputs plus assumptions lead to outcomes, do outcomes plus assumptions lead to impact? Can all outputs be delivered by the project, are outcomes outside UNIDO's control but within its influence?</p> <p>Indicators: Do indicators describe and specify expected results (impact, outcomes and outputs) in terms of quantity, quality and time? Do indicators change at each level of results and independent from indicators at higher and lower levels? Do indicators not restate expected results and not cause them? Are indicators necessary and sufficient and do they provide enough triangulation (cross-checking)? Are they indicators sex-disaggregated, if applicable?</p> <p>Sources of verification: Are the sources of verification/data able to verify status of indicators, are they cost-effective and reliable? Are the sources of verification/data able to verify status of output and outcome indicators before project completion?</p>

#	Evaluation criteria
B	Project performance and progress towards results
1	<p>Relevance</p> <p>So far, how relevant is the project to the: target groups' needs development priorities of the country (national poverty reduction strategy, sector development strategy, etc.) UNIDO comparative advantages and project's donor policies and priorities</p> <p>Are appropriate beneficiaries groups being targeted by the project?</p> <p>Are the original project objectives (expected results) still valid and pertinent to the target groups? If not, have then been revised? Are the revised objectives still valid in today context?</p>
2	<p>Effectiveness and progress towards expected results</p> <p>SO FAR, what are the main results (mainly outputs and if possible, outcomes) of the project? What have been the quantifiable results of the project to-date?</p> <p>To what extent did the project achieve their objectives (outputs and outcomes), against the original/revised target(s)? Please provide a brief analysis on the project progress in achieving the objectives.</p> <p>What is the quality of the results? How effective is the execution of the stakeholders? How do the stakeholders perceive the results? What is the feedback of the beneficiaries and the stakeholders on the project effectiveness? Please provide evidence/examples from the project to back up the statements.</p> <p>Were the right target groups reached?</p> <p>Can the project attain it objectives and utilize the resources assigned for this within the remaining period?</p>
3	<p>Efficiency</p> <p>Comment on how economically the project resources/inputs (in terms of funding, expertise, time...) are being used to produce results (outputs and outcomes) SO FAR? Comment on the quality of expertise/technical assistance provided; whether the expected results were achieved within the original budget, if no please explain why.</p> <p>How timely is the project in producing outputs, initial outcomes and delivering inputs (with least delays)? Based on the work plan, comment on the delay or acceleration of implementation period of the project. Were the project's activities in line with the schedule of activities as defined by the project team and annual work plans? Were the disbursements and project expenditures in line with budgets?</p> <p>Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements?</p> <p>Is the project cost-effective compared to similar interventions? Could the project have produced more with the same resources, or the same with less money, or with less delay? Wherever possible, the MTR team should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects?</p>

#	Evaluation criteria
4	<p>Gender mainstreaming</p> <p>Did the project/programme design adequately consider the gender dimensions in its interventions? If so, was gender considered at the level of project outcome, output or activity?</p> <p>Was a gender analysis included in a baseline study or needs assessment (if any)? Were there gender-related project indicators?</p> <p>How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?</p> <p>Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)?</p> <p>Are women/gender-focused groups, associations or gender units in partner organizations consulted and/or included in the project?</p> <p>To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?</p>
5	<p>Cross-cutting aspects</p> <p>Are environmental aspect related to the protection of the environment and/or adaptation to climate change taken into account</p> <p>Are social issues addressed to ensure inclusiveness of the project beneficiaries</p>
C	Project implementation management
1	<p>Project management</p> <p>Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective?</p> <p>Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.</p> <p>Review whether the national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)? The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?</p>
2	<p>Results-based work planning, M&E, reporting</p> <p>Results-based work planning</p> <p>Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.</p> <p>Are there any annual work plans? Are work-planning processes results-based? Has the logframe been used to determine the annual work plan (including key activities and milestone)? If not, suggest ways to re-orientate work planning to focus on results?</p>

#	Evaluation criteria
	<p>Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.</p> <p>Results-based M&E</p> <p>Verify whether an M&E system is in place and facilitated timely tracking of progress toward project objectives by collecting information on selected indicators continually throughout the project implementation period; annual project reports are complete and accurate, with well-justified ratings; the information provided by the M&E system is used to improve performance and to adapt to changing needs; and the project has an M&E system in place with proper training for parties responsible for M&E activities to ensure that data will continue to be collected and used after project completion. Are monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impact in the logframe? Is any project steering or advisory mechanism put in place? Do performance monitoring and reviews take place regularly?</p> <p>Review the monitoring tool currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?</p> <p>Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?</p> <p>How has the logframe been used for Monitoring and Evaluation purposes (developing M&E plan, setting M&E system, determining baseline and targets, annual implementation review by the Project Steering Committee...) to monitor progress towards expected outputs and outcomes? Do project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? Is information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the Project team and managers and PSC regularly ask for performance and results information? How well have risks outlined the project document and in the logframe been monitored and managed? How often have risks been reviewed and updated? Has a risk management mechanism been put in place?</p> <p>Results-based reporting</p> <p>Assess how adaptive management changes have been reported by the project management and shared with the PSC.</p> <p>Assess how well the Project Team and partners undertake and fulfil donor and UNIDO reporting requirements (i.e. how have they addressed delays or poor performance, if applicable?)</p> <p>Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.</p>
3	<p>Financial management and co-financing</p> <p>Review the financial management of the project, with specific reference to the cost-effectiveness of interventions. Did the project have appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds? Was there due diligence in the management of funds and financial audits?</p> <p>Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.</p>

#	Evaluation criteria
	<p>Did promised co-financing materialize? Is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans.</p>
4	<p>Stakeholder engagement and communication</p> <p>Stakeholder engagement</p> <p>Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?</p> <p>Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?</p> <p>Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?</p> <p>Communication</p> <p>Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?</p> <p>Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)</p> <p>For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits</p>
5	<p>Sustainability of benefits</p> <p>The MTE should validate whether the risks identified in the Project Document and progress reports or implementations reviews are the most important and assess the following risks to sustainability:</p> <p>Financial risks:</p> <p>What is the likelihood of financial and economic resources not being available once the project ends? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in future, there will be adequate financial resources for sustaining project outcomes.)?</p> <p>Socio-political risks:</p> <p>Are there any social or political risks that may jeopardize the sustainability of project outcomes?</p> <p>What is the risk that the level of stakeholder ownership and engagement (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?</p> <p>Do the various key stakeholders see that it is in their interest that project benefits continue to flow?</p>

#	Evaluation criteria
	<p>Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?</p> <p>Institutional framework and governance risks: Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize the sustainability of project benefits? Are requisite systems for accountability and transparency and required technical know-how in place?</p> <p>Environmental risks: Are there any environmental risks that may jeopardize the sustainability of project outcomes? Are there any project outputs or higher level results that are likely to have adverse environmental impacts, which, in turn, might affect the sustainability of project benefits?</p>
D	Performance of partners
1	<p>UNIDO Project team in the field Has the project team discharged its project implementation and management functions adequately (in terms of work planning and executing, monitoring and reviewing performance, allocating funds, and following up agreed/corrective actions)? Has an effective M&E system been put in place, was it closely link with the logframe, does it generate information on performance and results which is useful for project managers and PSC to make critical decisions? Has the management of flow of funds and procurement been suitable for ensuring timely implementation? How proactive and prompt the project team was to ensure timely implementation of recommendations from experts of support missions and HQ-based project managers?</p> <p>UNIDO HQ-based management Timely recruitment of project staff Project modifications following changes in context or after the Mid-Term Review Follow-up to address implementation bottlenecks Role of UNIDO country presence (if applicable) supporting the project Engagement in policy dialogue to ensure up-scaling of innovations Coordination function Exit strategy, planned together with the government</p>
2	<p>National counterparts Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation? Has the government assumed ownership and fulfilled responsibility for the project? Were counterpart resources (funds and staffing) provided as planned in the project design? Did the government ensure suitable coordination of the various departments involved in the project implementation?</p>

#	Evaluation criteria
3	<p>Donor</p> <p>How active has the donor been in reviewing the project performance and implementation?</p> <p>How proactive and prompt has the donor been in providing necessary support to the project implementation (in terms of decisions on fund installment, approval/rejection of request from project team...)?</p> <p>Does the donor ask for information related to project performance and results?</p> <p>To what extent does the donor make decisions based on performance and results information?</p>

Annex C: Terms of Reference



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE (TOR) for the supply of services required to Mid-term Review of “Integrated Adoption of New Energy Vehicles in China”

This Terms of Reference will be used for the provision of services related to the Mid-Term-Review of UNIDO’s project “Integrated Adoption of New Energy Vehicles in China”.

The proposal should contain a detailed description of the services to be provided and the key experts/personnel to be assigned for preparation of the abovementioned documents. The cost breakdown for each activity should be included in the proposal. All deviations from the Terms of Reference should be clearly indicated in the proposal.

I. ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division (ODG/EVQ/IEV) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. ODG/EVQ/IEV is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

II. PROJECT CONTEXT AND BACKGROUND INFORMATION

Detailed context and background information of the project can be found in the terms of reference (ToR) for this mid-term evaluation.

III. SCOPE OF SUPPLY

The contractor shall deliver the services as follows: The total duration for the whole assignment of the project is estimated to be 30 days starting at the contract award.

1) Review and analyze project documentation and brief relevant country background information (national policies and strategies, UN strategies and general economic data, which is summarized in the Project Document); read through existing Theory of Change Reports, determine key data to collect in the field and adjust the key data collection instrument if needed (questionnaires, logic models).

Deliverables

- Adjust table of evaluation questions, questionnaires, interview guide, logic models, to ensure understanding, depending on country specific context.
- Draft list of stakeholders mapping to interview during the field missions.

Time schedule of assignment 1 ☐ 5 days

2) Streamlines specific questions to address key issues in the ToR, specific methods that will be used and data to collect in the field visits, detailed evaluation methodology confirmed, draft Theory of Change, and tentative agenda for fieldwork.

Deliverables

- Draft Theory of Change based on existing reports, and evaluation framework to submit to the Evaluation Manager for clearance.
- Detailed evaluation schedule.
- Set up required meetings with partners and government counterparts.

Time schedule of assignment 2 □ 2 days

3) Briefing with the UNIDO Independent Evaluation Division, Project Manager and other key stakeholders at UNIDO HQ.

Deliverables

- Detailed evaluation schedule with tentative mission agenda (including list of stakeholders to interview and site visits); mission planning;

Time schedule of assignment 3 □ 1 day

4) Coordinate and conduct the field mission in cooperation with the Project Management Unit, where required; Discuss and share the evaluation's preliminary findings, conclusions and recommendations to the Team Leader of MIIT and SEA-China to contribute to the assessment.

Deliverables

- Conduct meetings with relevant project stakeholders, beneficiaries, the GEF Operational Focal Point (OFP), etc. for the collection of data and clarifications;
- Evaluation presentation of the evaluation's preliminary findings, conclusions and recommendations to stakeholders in the country, including the GEF OFP, at the end of the mission.

Time schedule of assignment 4 □ 10 days

5) Present overall findings and recommendations to the stakeholders at UNIDO HQ.

Deliverables

- After field mission(s): Presentation slides, feedback from stakeholders obtained and discussed

Time schedule of assignment 5 □ 1 day

6) Prepare the evaluation report, according to the ToR; Share the evaluation report with UNIDO HQ and national stakeholders for feedback and comments.

Deliverables

- Draft evaluation report.

Time schedule of assignment 6 □ 8 days

7) Revise the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.

Deliverables

- Final evaluation report.

Time schedule of assignment 7 □ 3 days

IV. REPORTING

The reports shall be submitted to UNIDO in accordance with the provisional time schedule. The reports should be provided in English and presented in electronic format.

V. PAYMENT SCHEDULE

Upon signature of the contract 30% of the total agreed amount will be paid by UNIDO. Upon delivery of the draft report 50% will be released and 20% upon delivery of the final report.

VI. QUALIFICATIONS

The contractor's staff must have advanced degree in environment, energy economics, political science, development studies or related areas.

- Furthermore, the staff must have the following technical and functional experience:
- Minimum of 10 years' experience in environmental/energy efficiency project management and/or evaluation (of development projects)
- Knowledge of China and energy transitions in emerging economies
- Knowledge about GEF operational programs and strategies and about relevant GEF policies such as those on project life cycle, M&E, incremental costs, and fiduciary standards, as required
- Experience in the evaluation of GEF projects and knowledge of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries or China, an asset.

Annex D - Mid-term evaluation report outline

Executive summary

- Must provide a synopsis of the storyline which includes the main evaluation findings and recommendations
- Must present strengths and weaknesses of the project
- Must be self-explanatory and should be maximum 3-4 pages in length

I. Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
- Scope and objectives of the evaluation, main questions to be addressed
- Information sources and availability of information
- Methodological remarks, brief limitations encountered and validity of the findings

II. Project background

- Brief country context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project
- Sector-specific issues of concern to the project⁵ and important developments during the project implementation period
- Project summary:
 - Fact sheet of the project: including project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing
 - Brief description including history and previous cooperation
 - Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation
 - Positioning of the UNIDO project (other initiatives of Government, other donors, private sector, etc.)
 - Counterpart organization(s)

III. Evaluation findings

This is the key chapter of the report and should address all evaluation criteria and questions. Assessment must be based on factual evidence collected and analyzed from different sources. The evaluators' assessment can be broken into the following sections:

- A. Project design assessment
 - 1. Project design
 - 2. Project results framework/logframe
- B. Project performance and progress towards results
 - 1. Relevance
 - 2. Effectiveness and progress towards expected results
 - 3. Efficiency
 - 4. Gender mainstreaming
- C. Project implementation management
 - 1. Project management
 - 2. Results-based work planning, monitoring and evaluation, reporting
 - 3. Financial management and co-financing
 - 4. Stakeholder engagement and communication
 - 5. Sustainability

⁵ Explicit and implicit assumptions in the logical framework of the project can provide insights into key-issues of concern (e.g., relevant legislation, enforcement capacities, government initiatives)

D. Performance of Partners

IV. Conclusions, recommendations and lessons learned

This chapter can be divided into three sections:

A. Conclusions

This section should include a storyline of the main evaluation conclusions related to the project's achievements and shortfalls. It is important to avoid providing a summary based on each and every evaluation criterion. The main conclusions should be cross-referenced to relevant sections of the evaluation report.

B. Recommendations

This section should be succinct and contain few key recommendations. They should be:

- Based on evaluation findings
- Realistic and feasible within a project context
- Indicating institution(s) responsible for implementation (addressed to a specific officer, group or entity who can act on it) and have a proposed timeline for implementation if possible
- Commensurate with the available capacities of project team and partners
- Taking resource requirements into account.

Recommendations should be structured by addressees:

- UNIDO
- Government and/or counterpart organizations
- Donor

C. Lessons learned

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation
- For each lesson, the context from which they are derived should be briefly stated

Annexes should include the evaluation ToR, list of interviewees, documents reviewed, a summary of project identification and financial data, including an updated table of expenditures to date, and other detailed quantitative information. Dissident views or management responses to the evaluation findings may later be appended in an annex.

Annex E: Checklist on evaluation report quality

Project Title:

UNIDO SAP ID:

Evaluation team:

Quality review done by:

Date:

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

Rating system for quality of evaluation reports

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

Annex F: Guidance on integrating gender in evaluations of UNIDO projects and Projects

A. Introduction

Gender equality is internationally recognized as a goal of development and is fundamental to sustainable growth and poverty reduction. The UNIDO Policy on gender equality and the empowerment of women and its addendum, issued respectively in April 2009 and May 2010 (UNIDO/DGB(M).110 and UNIDO/DGB(M).110/Add.1), provides the overall guidelines for establishing a gender mainstreaming strategy and action plans to guide the process of addressing gender issues in the Organization's industrial development interventions.

According to the UNIDO Policy on gender equality and the empowerment of women:

Gender equality refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not suggest that women and men become 'the same' but that women's and men's rights, responsibilities and opportunities do not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. It is therefore not a 'women's issue'. On the contrary, it concerns and should fully engage both men and women and is a precondition for, and an indicator of sustainable people-centered development.

Empowerment of women signifies women gaining power and control over their own lives. It involves awareness-raising, building of self-confidence, expansion of choices, increased access to and control over resources and actions to transform the structures and institutions which reinforce and perpetuate gender discriminations and inequality.

Gender parity signifies equal numbers of men and women at all levels of an institution or organization, particularly at senior and decision-making levels.

The UNIDO projects/projects can be divided into two categories: 1) those where promotion of gender equality is one of the key aspects of the project/project; and 2) those where there is limited or no attempted integration of gender. Evaluation managers/evaluators should select relevant questions depending on the type of interventions.

B. Gender responsive evaluation questions

The questions below will help evaluation managers/evaluators to mainstream gender issues in their evaluations.

B.1 Design

- Is the project/project in line with the UNIDO and national policies on gender equality and the empowerment of women?
- Were gender issues identified at the design stage?
- Did the project/project design adequately consider the gender dimensions in its interventions? If so, how?
- Were adequate resources (e.g., funds, staff time, methodology, experts) allocated to address gender concerns?
- To what extent were the needs and priorities of women, girls, boys and men reflected in the design?
- Was a gender analysis included in a baseline study or needs assessment (if any)?
- If the project/project is people-centered, were target beneficiaries clearly identified and

disaggregated by sex, age, race, ethnicity and socio-economic group?

- If the project/project promotes gender equality and/or women's empowerment, was gender equality reflected in its objective/s? To what extent are output/outcome indicators gender disaggregated?

B.2 Implementation management

- Did project monitoring and self-evaluation collect and analyze gender disaggregated data?
- Were decisions and recommendations based on the analyses? If so, how?
- Were gender concerns reflected in the criteria to select beneficiaries? If so, how?
- How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?
- If the project/project promotes gender equality and/or women's empowerment, did the project/project monitor, assess and report on its gender related objective/s?

B.3 Results

- Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision making authority)?
- In the case of a project/project with gender related objective/s, to what extent has the project/project achieved the objective/s? To what extent has the project/project reduced gender disparities and enhanced women's empowerment?

Annex 2. List of Documents Reviewed

Project Design and Approval Documentation

GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL, China UNIDO GEF 6 CEO End_9226 submission signed, March 2017

Technical Annexes to the CEO EF of Integrated Adoption of New Energy Vehicles in China (9226), CCM_9226.Technical Annexes

CEO Endorsement – Inputs from UNIDO Gender experts, Gender.checklist.Annex.NEV150157

GENDER MAINSTREAMING CHECKLIST FOR GEF PROJECTS, Gender_Checklist_NEVs.150157

Co-Financing Information

Attachments of all Co-financing Letters: SAE-China, UNIDO, SIAC, Yancheng Municipal State-Owned Asset Investment Group, Yancheng Oriental Investment and Development Group. AnnexL.cofinancing.letters

Project fund and co-financing usage report provided by SAE-China in MTR (In Chinese, January 2021)

Work Report for Shanghai Demonstration in 2020 provided by SIAC (In Chinese, December 2020)

Implementation Related

Summary report for Mid-term evaluation provided by SAE-China (In Chinese, December 2020)

Promotional video for Shanghai Demonstration provided by SIAC

Site news and minutes on the website for the GEF6 project

M&E Information

Project Implementation Report (1 July 2019 – 30 June 2020), 9226_2020_PIR_UNIDO_China_Ghoneim Biannual Report, Reporting Period: <February, 2019 - August, 2019>

Biannual Report, 9226_Progress report, Reporting Period: <2019.8-2020.1 >

Biannual Report, 9226_EV-RE progress report 201902-201908 Chinese version

GEF6_CCM_Tracking_Tool_China EV.9226

KPI Tracking1, September 2019

Progress reports

Provided by SAE-China to UNIDO on 17 March 2020:

App1 Special Analysis of the New Energy Vehicle Market at Home and Abroad

App2 Integrated Development Trends of Electrification, Intelligence and Sharing in the Automotive Industry

App3 Analysis of the Development Status of Smart energy and Renewable Energy at Home and Abroad

App4 Research on the Integration of New Energy Vehicles and Renewable Energy

APP5 Research Report on the Development of Electric Vehicles (Policy, Technology, Trends)

APP6 Investigation report of microgrid technology demonstration case

APP7 Investigation of Domestic Cases and Rugao Basic Situation

APP8 Proposed amendments to GBT 27930-2015 Communication Protocol between Electric Vehicle Non-vehicle Conductive Charger and Battery Management System

APP9 Draft Chinese Industry Standard-Two-way interaction between charging and discharging of electric vehicles Part 1 General principles

APP10 Draft Chinese Industry Standard-Two-way interaction between charging and discharging of electric vehicles Part 2 Smart charging

APP11 Research on fire extinguishing technology of energy storage battery with echelon utilization

APP12 Research on automatic fire extinguishing device for energy storage system with echelon utilization

App13 Smart Charging Demonstration Technical Specifications

App14 Micro-grids Demonstration Technical Specifications

APP15 V2G Key technical specification

APP16 Energy Management Center Technical Requirement

Provided by SAE-China to UNIDO in July to August 2019:

APP 1 Development Status Analysis and Trend Forecast of New Energy Automobile Industry Technology

APP 2 Latest Practices of Interaction between New Energy Vehicles and the Power Grid at Home and Abroad

APP 3 Research on Development Status and Future Prospects of Renewable Energy

APP 4 Research on the Integrated Development of New Energy Vehicles and Renewable Energy

APP 5 Research Report on the Power Battery Recycling Industry of New Energy Vehicles in China

APP 6 Report on Evaluation Researches on the Residual Value of Batteries in China and Abroad

APP 7 Research papers

APP 8 Research on residual value evaluation system for secondary use of retired batteries

APP 9 Purchasing of retired batteries for the implementation of relevant test verification work

APP 10 Construction of full life cycle database of power batteries

APP 11 Development of residual value evaluation model tools

APP 12 Safety Evaluation Method of Secondary Use of Retired Battery Fire as Energy Storage Power Station

APP 13 Research on fire pattern recognition and detection technology of energy storage battery

APP 14 Suppression of lithium battery fire extinguishing agent technology

APP 15 Life Cycle Assessment Methods for Greenhouse Gases and Air Pollutants Emissions of the Automobile

APP 16 Report on Greenhouse Gas and Air Pollutant Emissions Assessment of Vehicle Life Cycle 2018

APP 17 Smart Charging Technical Specifications

APP 18 Solar-storage-EV charging Technical Specifications

APP 19 Energy Management Center Technical requirements

[Other materials](#)

Best Practices in Electric Mobility, 9226_UNIDO - Electric Mobility Paper

Annex 3. List of Stakeholders Consulted

Related to UN Agencies

Salutation	Name	Organization	City/Country	Role in project
Ms.	Katarina Barunica	UNIDO	Vienna, Austria	Project Manager
Ms.	Rana Ghoneim	UNIDO	Vienna, Austria	Ex-Project Manager
Mr.	Ma Jian	UNIDO	Beijing, China	Project designer, PSC

National Implementing Partners, Staff, Consultants

Salutation	Name	Organization	City/Country	Role in project
Ms.	Wang Ju	SAE-China	Beijing, China	Secretary General of SAE-China, Senior Engineer; PSC
Mr.	Wang Ji	SAE-China	Beijing, China	Senior Engineer; PSC
Mr.	Li Tianwen	SAE-China	Beijing, China	Member of PMO
Mr.	Zhang Huilai	SAE-China	Beijing, China	Senior Engineer; PSC
Ms.	Guan Qingping	SIAC	Shanghai, China	Member of Party committee of SIAC; PSC
Ms.	Liu Huiping	Shanghai Transportation Engineering Society	Shanghai, China	Secretary General; Leader of experts committee of Shanghai demo
Ms.	Qiao Li	SIAC	Shanghai, China	Manager of New Energy Division, PSC
Ms.	Li Chengxi	SIAC	Shanghai, China	Deputy manager of New Energy Division, PSC
Ms.	Zhao Fengchao	SIAC	Shanghai, China	Local PMO
Mr.	Wang Bing	Qingdao Telaidian Company	Qingdao, China	Manager of Qingdao demo
Mr.	Xu Hongjian	New Energy Automobile Industrial Park in Rugao Economic Development Zone	Rugao, China	Deputy director, PSC
Mr.	Chen Kele	Shanghai Municipal Commission of Economy and Information Technology	Shanghai, China	Deputy director of Intelligent Manufacturing Promotion Office; local PSC
Mr.	Wu Qi	Shanghai Development and Reform Commission	Shanghai, China	Local PSC member
Ms.	Wang Wei	Shanghai Science and Technology Commission	Shanghai, China	Local PSC member
Mr.	Zhang Yingjie	Shanghai Transportation Commission	Shanghai, China	Local PSC member

Ms.	Shi Xu	Shanghai Housing Management Bureau	Shanghai, China	Local PSC member
Mr.	Wang Baobin	Shanghai Municipal Administration of Market Supervision	Shanghai, China	Local PSC member

End Beneficiaries and demo project undertakes

Salutation	Name	Organization	City/Country	Role in project
Ms.	Song Tianqi	Aerospace Smart Energy Research Institute	Shanghai, China	Manager of smart energy micro-grid demo
Ms.	Liu Jun	NIO	Shanghai, China	Manager of PV storage-battery charging micro-grid and V2G demo
Mr.	Zhuan Haitao	Shanghai E-Drive Automotive Service Company	Shanghai, China	Manager of electric bus rental demo
Mr.	Chen Shengwang	Shanghai Kuaibu New Energy Technology Company	Shanghai, China	Manager of PV-storage-charging-inspection integrated smart micro-grid demo
Mr.	Ye Xu	Shanghai Electric Apparatus Research Institute	Shanghai, China	Manager of EV and charging infrastructure public testing platform demo
Ms.	Lv Jing	Shanghai Anyo Energy Efficiency Technology Company	Shanghai, China	Manager of smart charging and PV-storage-charging micro-grid demo
Ms.	Yan Xueying	State Grid Electric Company	Beijing, China	Manager of V2G demo

Annex 4. Financial Data

Financing plan summary

Source of support	Breakdown by type	Total (USD)
Donor: GEF	Cash grant financing	8,930,000
Co-financing (see breakdown below)	Cash and in-kind	117,000,000
Total Project Financing (USD)	-	125,930,000

Source: Project Document (Contract signed)

Indicative Co-financing at Project Outset, by source and by name, (USD)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (USD)
Recipient Government	Yancheng Municipal State-Owned Asset Investment Group	Grants	18,180,000
Recipient Government	Yancheng Municipal State-Owned Asset Investment Group	In-kind	12,120,000
Private Sector	Yancheng Oriental Investment and Development Group	Grants	18,000,000
Private Sector	Yancheng Oriental Investment and Development Group	In-kind	12,000,000
Private Sector	Shanghai International Automobile City Company	Grants	33,000,000
Private Sector	Shanghai International Automobile City Company	In-kind	22,000,000
Private Sector	Society for Automotive Engineers (SAE) China	In-kind	1,200,000
GEF Agency	UNIDO	Grants	100,000
GEF Agency	UNIDO	In-kind	400,000
Total Co-financing			117,000,000

Source: Project Document (Contract signed)

Financial Overview by Component, in USD, presented in Project fund and co-financing usage report provided by SAE-China in MTR (In Chinese, January 2021), 6 March 2020

The expenditure of the project in the first year (August 1, 2018-October 31, 2019):

Component	Planned Project Expenditure	Total Project Expenditure	Fund Utilization Rate
Policies and Programs	790,000	855,179.62	108.3%
Government Institutional Capacity Building	190,000	356,817.07	187.8%
Piloting of Technical Measures and	553,000	419,997.94	75.9%

Commercialization Approaches (Project Demos)			
Awareness Raising and Dissemination amongst Manufacturers, Suppliers, and Consumers	185,800	38,244.02	20.6%
Monitoring and Evaluation (M&E)	140,000	107,161.77	76.5%
Total	1,858,800	1,777,400.42	95.6%

The expenditure of the project in the second year (November 1, 2019-December 31, 2020):

Component	Planned Project Expenditure	Total Project Expenditure	Fund Utilization Rate
Policies and Programs	1,088,600	802,456.23	73.7%
Government Institutional Capacity Building	344,000	155,463.15	45.2%
Piloting of Technical Measures and Commercialization Approaches (Project Demos)	1,344,400	1,150,565.62	85.6%
Awareness Raising and Dissemination amongst Manufacturers, Suppliers, and Consumers	616,125	552,309.57	89.6%
Monitoring and Evaluation (M&E)	140,000	164,451.07	117.5%
Total	3,533,125	2,825,245.64	80.0%

GEF funds available:

Total funds allocated from GEF: 5,310,515.42 USD

Total expenditure of the first two years: 4,602,646.06 USD

The remaining funds: 707,869.36 USD

[Co-financing allocation and usage, in CNY, presented in Project fund and co-financing usage report provided by SAE-China in MTR \(In Chinese, January 2021\), 6 March 2020](#)

Co-financing from SIAC:

	Planned Co-financing	Actual Allocation	Planned Expenditure	Actual Expenditure
First batch of demos	16,647,000	16,647,000	16,647,000	16,647,000
Second batch of demos	42,750,000	42,750,000	42,750,000	37,250,000
Third batch of demos	32,881,000	32,881,000	32,881,000	31,081,000
Electric Bus Rental	375,378,600	419,594,900	375,378,600	419,594,900
Electric Car Sharing		78,726,800		78,726,800
Total	467,656,600	590,599,700	467,656,600	583,299,700

Co-financing from New Energy Automobile Industrial Park in Rugao Economic Development Zone:

	Planned Co-financing	Actual Allocation	Planned Expenditure	Actual Expenditure
DC Charging Pile	50,000,000	48,336,000	50,000,000	48,336,000
AC Charging Pile	2,000,000	1,530,000	2,000,000	1,530,000

Microgrid Charging Station	15,000,000	14,300,000	15,000,000	14,300,000
Total	67,000,000	64,166,000	67,000,000	64,166,000

Co-financing allocation ratio: (590,599,700 CNY from SIAC + 64,166,000 CNY from Rugao Economic Development Zone) / (117,000,000 USD * 6.85 exchange rate) * 100%=82%