



Enabling Zero Carbon Energy in Rural Towns and Villages in China (EZCERTV) Project

Part I: Project Information

GEF ID

10366

Project Type

FSP

Type of Trust Fund

GET

CBIT/NGI

CBIT **No**

NGI **No**

Project Title

Enabling Zero Carbon Energy in Rural Towns and Villages in China (EZCERTV) Project

Countries

China

Agency(ies)

UNDP

Other Executing Partner(s)

Ministry of Agriculture and Rural Affairs (MARA)

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Climate Change, Focal Areas, Climate Change Mitigation, Renewable Energy, Financing, Energy Efficiency, Influencing models, Strengthen institutional capacity and decision-making, Deploy innovative financial

instruments, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Demonstrate innovative approaches, Indigenous Peoples, Stakeholders, Communications, Public Campaigns, Awareness Raising, Education, Local Communities, Private Sector, SMEs, Individuals/Entrepreneurs, Type of Engagement, Information Dissemination, Partnership, Consultation, Gender Equality, Gender Mainstreaming, Beneficiaries, Capacity, Knowledge and Research, Capacity Development, Knowledge Generation

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 1

Climate Change Adaptation

Climate Change Adaptation 1

Submission Date

6/16/2021

Expected Implementation Start

10/1/2021

Expected Completion Date

9/30/2026

Duration

60In Months

Agency Fee(\$)

848,580.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-1	Decentralized renewable power with energy storage	GET	6,932,420.00	51,180,000.00
CCM-1-3	Accelerating energy efficiency adoption	GET	2,000,000.00	38,420,000.00
Total Project Cost(\$)			8,932,420.00	89,600,000.00

B. Project description summary

Project Objective

Acceleration of zero-carbon transformation in China's rural area to contribute to global climate change mitigation and the achievement of the United Nations sustainable development goals (SDGs).

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
1: Policy Formulation and Institutional Mechanisms on Zero Carbon Town and Village Development	Technical Assistance	1: Effective enforcement of policies and institutional frameworks towards the development of zero carbon towns and villages in rural China	<p>1.1: Formulated, approved, and enforced policies on the promotion and support of zero carbon town and village development in line with China's rural revitalization strategy and goal of achieving carbon neutrality before 2060.</p> <p>1.2: Established and operational institutional framework to promote and support zero-carbon town and village development.</p> <p>1.3: Formulated, approved, and enforced technical, management and operational standards in rural renewable energy (RE) development and utilization, energy storage, energy conservation and energy efficiency (EC&EE) and comprehensive energy management.</p> <p>1.4: Completed assessment of</p>	GET	1,158,000.00	1,400,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
2: Integrated Renewable Energy and Energy Efficiency Technologies Applications for Zero Carbon Town and Village Development	Investment	2: Low/zero carbon technology applications are widely implemented in rural towns and villages in rural areas of China	<p>2.1: Completed and operational zero carbon technology demonstration involving the installation of about 167.2 MW of RE-based power generation capacity in 120 rural villages and 4 towns for energy production and utilization showcasing the cost-effective application of new RE delivery mechanisms decentralized RE-based energy generation and distribution (through mini/micro-grids) and energy storage.</p> <p>2.2: Completed and operational demonstrations of the cost-effective applications of EC&EE technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development. Estimated annual energy savings of about 6,487.0</p>	GET	6,338,467.00	65,000,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
3: Facilitating Rural Zero Carbon Development and Lifestyle Popularization and Knowledge Dissemination	Technical Assistance	3: Enhanced and strengthened public awareness and knowledge about low carbon technology energy applications in support of zero carbon town and village development in rural China	<p>3.1: Completed information, communication, and education (ICE) program on zero carbon development in rural towns and villages in China for local authorities, service companies, rural energy cooperatives, public institutions, private entrepreneurs, farmers, and the public.</p> <p>3.2: Strengthened international cooperation and experience sharing in zero-carbon towns and villages development and green energy transformation with countries along the "Belt and Road", to support these countries in achieving their nationally determined contributions (NDC)</p> <p>3.3: Established social mechanism for the promotion of zero-carbon town and village development</p>	GET	1,010,600.00	20,000,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Sub Total (\$)					8,507,067.00	86,400,000.00
Project Management Cost (PMC)						
	GET		425,353.00		3,200,000.00	
Sub Total(\$)			425,353.00		3,200,000.00	
Total Project Cost(\$)			8,932,420.00		89,600,000.00	

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Agriculture and Rural Affairs (MARA)	Grant	Investment mobilized	13,200,000.00
Recipient Country Government	MARA	In-kind	Recurrent expenditures	1,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Hebei Province	Grant	Investment mobilized	8,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Shanxi Province	Grant	Investment mobilized	5,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Liaoning Province	Grant	Investment mobilized	5,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Heilongjiang Province	Grant	Investment mobilized	5,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Hubei Province	Grant	Investment mobilized	5,000,000.00
Recipient Country Government	Department of Agricultural and Rural Affairs of Yunnan Province	Grant	Investment mobilized	4,000,000.00
Recipient Country Government	Rural Energy Workstations of Ningxia Hui Autonomous Region	Grant	Investment mobilized	4,950,000.00
Recipient Country Government	Rural Energy Workstations of Ningxia Hui Autonomous Region	In-kind	Recurrent expenditures	50,000.00
Civil Society Organization	China Association of Rural Energy Industry	Grant	Investment mobilized	5,000,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Private Sector	Hebei Jing'an Bioenergy Technology Co., Ltd.	Grant	Investment mobilized	7,000,000.00
Private Sector	Shanxi Golden Cooperate DC Power Distribution Engineering Technology Co., Ltd.	Grant	Investment mobilized	10,000,000.00
Private Sector	Chaoyang Jiajiadian Farm Co., Ltd.	Grant	Investment mobilized	3,500,000.00
Private Sector	Hailun Limin Energy-saving Boiler Manufacturing Co., Ltd.	Grant	Investment mobilized	3,500,000.00
Private Sector	Songzi Senchun Agricultural Development Co., Ltd.	Grant	Investment mobilized	3,500,000.00
Private Sector	Yunan Fu Hui Technology Co., Ltd.	Grant	Investment mobilized	2,200,000.00
Private Sector	Ningxia Runwell Energy & Environment Engineering Co., Ltd.	Grant	Investment mobilized	3,500,000.00
GEF Agency	United Nations Development Programme (UNDP)	In-kind	Recurrent expenditures	200,000.00
Total Co-Financing(\$)				89,600,000.00

Describe how any "Investment Mobilized" was identified

The EZCERTV Project's implementing partner, Ministry of Agriculture and Rural Reforms (MARA) is one of the important ministries of the GOC and has been developing and implementing projects (including those funded by the GEF) and at the same time also mobilize counterpart funding to such projects. They mobilize project funds from multi-lateral and bilateral donor agencies for funding projects that especially are geared towards the development of the country's agricultural sector, e.g., rural revitalization. The various local governments that will be working on this proposed project themselves are also doing their own financial mobilization efforts for their respective agricultural sectors. During the stakeholder consultations that were conducted by the EZCERTV project development team (PDT) in the project's partner provinces, they received expressions of interest and commitments from the local government authorities (provincial and county levels) to participate and co-finance the planned project activities. The PDT was also able to get the commitment of private sector entities to commit to investment projects that

then are used as baseline activities for the planned demonstrations of the project. In that regard, MARA and the PDT were able to leverage some of the ongoing and planned investments and initiatives in their respective agricultural sector and rural development agenda. MARA will explore further commitments from interested potential project partner as needed during the implementation stage of the project.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNDP	GET	China	Climate Change	CC STAR Allocation	8,932,420	848,580
Total Grant Resources(\$)					8,932,420.00	848,580.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)
PPG Required **false**

PPG Amount (\$)
200,000

PPG Agency Fee (\$)
19,000

Agenc y	Trust Fund	Country	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)
UNDP	GET	China	Climat e Change	CC STAR Allocation	200,000	19,000
Total Project Costs(\$)					200,000.00	19,000.00

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	4079416	1165400	0	0
Expected metric tons of CO ₂ e (indirect)	0	2913600	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	4,079,416	1,165,400		
Expected metric tons of CO ₂ e (indirect)		2,913,600		
Anticipated start year of accounting		2024		
Duration of accounting		2		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)		13,200,000,000		

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Solar Photovoltaic select	20.30	157.90		<input type="checkbox"/>
Biomass select		9.30		<input type="checkbox"/>
Biomass select		3,902.90		<input type="checkbox"/>

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	630,000	460,000		
Male	538,500	458,500		
Total	1168500	918500	0	0

Part II. Project Justification

1a. Project Description

1a.1) *Global environmental problems, root causes and barriers that need to be addressed (systems description):* N/A

1a.2) *Baseline scenario and any associated baseline projects*

Because of the outbreak of the Covid-19 pandemic, the duration of all ongoing GEF-funded project preparation activities in China were extended by 6 months, which consequentially delayed the expected start of the implementation phase of EZCERTV Project. During the PIF preparation stage, the ADB-China's Rural Energy Ecological Construction project (which financed the development and implementation of large and medium-sized biogas projects), and the Rural Energy Comprehensive Construction Project for 2019-2022 (which included agricultural energy multi-energy applications and clean energy use in China's rural areas) were initially selected as baseline projects for the EZCERTV activities. However, since both projects are slated to be completed in the back half of 2022, there will be little overlap and synergy with the proposed EZCERTV Project. However, these projects have been replaced by three GOC funded projects, namely: the Comprehensive Utilization of Crop Straw?, the ?Resource Utilization of Livestock Manure?, and the ?Pilot Demonstration of Winter Clean Heating in Northern Areas?. All three these projects (described in Table 1 of the ProDoc) have a 2021-2026 timeline of implementation, which perfectly overlaps with the EZCERTV Project implementation period. Additionally, there will be a number of private sector funded projects that will be the baseline for the demonstration activities (illustrated in the demo descriptions annexed to the ProDoc). As evidenced by the co-financing table in Part I, Section C of this CEO Endorsement Request Document (CERDoc), the new baseline projects will facilitate at least the same volume of co-financing pledged in the approved PIF.

1a.3) *Proposed alternative scenario with a brief description of expected outcomes and components of the project.*

Please refer to description below and attached as Annex F of this document.

Annex F: CHANGES FROM THE PIF

This annex has been prepared in support of ?Section 1a.3): *Proposed alternative scenario with a brief description of expected outcomes and components of the project?*, and it shows how the detailed project design corresponds to the PIF and provides the rationale for the changes. The table below compares the outcomes and output statements in the PIF to that in the ProDoc. The main change concerns 2 Outputs, which have been merged in one to avoid duplication of activities and increase efficiency in delivering technical assistance. The other changes made are mainly on the reorganization and restructuring of the outputs. Overall, in each of the project components, the changes in some of the original output statements did not alter the theme and substance of the expected outcome. For the cases in which changes are significant, rationale is given. In each case, changes are explained, correspondence between PIF outputs and ProDoc outputs (if there are changes) are highlighted, and justification for changes is provided.

Table F-1: Changes from the PIF

Expected Outcomes/Outputs		Rationale for Change in PIF Outcomes/Outputs in the ProDoc
GEF-Approved PIF	Project Document	
Output 1.1: Formulated and approved policies on the promotion and support of zero carbon town and village development in line with China's circular economy and rural revitalization objectives.	Output 1.1: Formulated, approved, and enforced policies on the promotion and support of zero carbon town and village development in line with China's rural revitalization strategy and goal of achieving carbon neutrality before 2060.	<p>Following President Xi announcement at the UN General Assembly in late 2020 that China pledges to peak its GHG emissions before 2030 and become carbon neutral before 2060, the targets stated in the NDC, the PDT deemed important to highlight this commitment in the ProDoc.</p> <p>The word 'enforced' has been added to highlight that the drafted policies will be operationalized during EZCERTV implementation stage.</p>
Output 1.2: Established institutional framework to promote and support zero-carbon town and village development.	Output 1.2: Established and operational institutional framework to promote and support zero-carbon town and village development.	The word 'operational' has been added to highlight that the institutional framework will become effective during EZCERTV implementation stage.
Output 1.3: Formulated and approved technical, management and operational standards in rural renewable energy (RE) development and utilization, energy storage, energy conservation and energy efficiency (EC&EE) and comprehensive energy management.	Output 1.3: Formulated, approved, and enforced technical, management and operational standards in rural renewable energy (RE) development and utilization, energy storage, energy conservation and energy efficiency (EC&EE) and comprehensive energy management.	The word 'enforced' has been added to highlight that the drafted policies will be operationalized during EZCERTV implementation stage.
Output 1.4: Completed assessment of renewable energy resource endowment, economic and social development level, and energy use trends and patterns in rural China; and formulated energy-integrated development plans of pilot towns in selected 6 provinces.	Output 1.4: Completed assessment of renewable energy resource endowment, economic and social development level, and energy use trends and patterns in rural areas of selected provinces; and formulated energy-integrated development plans of pilot towns in selected 8 provinces.	During the LFA Workshop MARA pointed out the willingness of the GOC to possibly outreach a larger number of provinces than originally estimated. During the field mission, the PDT explored this possibility and based on ongoing and planned baseline projects the number of selected provinces where demos and TA activities will be implemented has been increased from 6 to 8

Expected Outcomes/Outputs		Rationale for Change in PIF Outcomes/Outputs in the ProDoc
GEF-Approved PIF	Project Document	
<p>Output 2.1: Completed and operational zero carbon technology demonstration involving the installation of about 182 MW of RE-based power generation capacity in 118 rural villages and 3 towns for energy production and utilization showcasing the cost-effective application of new RE delivery mechanisms decentralized RE-based energy generation and distribution (through mini/micro-grids), energy storage, EC&EE and comprehensive energy management.</p>	<p>Output 2.1: Completed and operational zero carbon technology demonstration involving the installation of about 167.2 MW of RE-based power generation capacity in 120 rural villages and 4 towns for energy production and utilization showcasing the cost-effective application of new RE delivery mechanisms decentralized RE-based energy generation and distribution (through mini/micro-grids) and energy storage.</p>	<p>Field missions to the selected locations have highlighted, compared to the PIF stage, a significantly higher potential for EE interventions than RE implementations, which led to a small reduction of RE-based power generation capacity (about 8.5%). The number of villages and towns, based on available resources, has been slightly increased. Furthermore, since the main focus of Output 2.1 is RE, while the main focus of Output 2.2 are EC&EE, for clarity every reference to EC&EE from Output 2.1 has been removed, which will be covered by the activities under Output 2.2 (which remain unchanged).</p>
<p>Completed and operational demonstrations of the cost-effective applications of EC&EE technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development. Estimated annual energy savings of about 2,314.4 TJ/year in 2 towns and 115 villages.</p>	<p>Completed and operational demonstrations of the cost-effective applications of EC&EE technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development. Estimated annual energy savings of about 6,487.0 TJ/year in 4 towns and 120 villages.</p>	<p>As stated above, field missions have indicated a higher potential for EE interventions, which have led to revise upwards the annual energy savings that will be reached by EXCERTV to 6,487.0 TJ, nearly 3 times as large as estimated during the PIF stage. Also the numbers of villages and towns have been tweaked upwards, based on available resources.</p>
<p>Output 2.3: Developed, published, and disseminated zero carbon town and village development guidelines that are in line with the ?ecological livability? and circular economy strategies for rural revitalization.</p>	<p>Output 2.3: Developed, published, and disseminated zero carbon town and village development guidelines to replicate and scale-up the impact of zero-carbon villages and towns.</p>	<p>Since replication of the demos during the EZCERTV is a vital element of the project, the statement of Output 2.3 has been changed to highlight that after the demo implementations under Output 2.1 and Output 2.2 will be completed, action will be taken to replicate the demos in other villages and towns in other rural areas.</p>

Expected Outcomes/Outputs		Rationale for Change in PIF Outcomes/Outputs in the ProDoc
GEF-Approved PIF	Project Document	
<p>Output 3.1: Completed training program on zero carbon town and village development for local authorities, service companies, rural energy cooperatives, public institutions, private entrepreneurs, farmers, and other stakeholders.</p> <p>Output 3.2: Completed information, communication, and education (ICE) program for the public on zero carbon development in rural towns and villages in China.</p>	<p>Output 3.1: Completed information, communication, and education (ICE) program on zero carbon development in rural towns and villages in China for local authorities, service companies, rural energy cooperatives, public institutions, private entrepreneurs, farmers, and the public.</p>	<p>During the project identification exercise of the LFA workshop, it was noticed that several activities in Outputs 3.1 and 3.2 were similar and in some cases overlapped. To avoid duplication of activities and to improve the efficiency of the project activities the two Outputs have been merged into a single Output. However, the new Output 3.1 will deliver the same results that the 2 former Outputs would have delivered.</p>
<p>Output 3.3: Completed promotion and implementation of zero-carbon rural development, circular economy and green transformation in countries along the ?Belt and Road?, to help these countries? in achieving their nationally determined contributions (NDC) commitments to the ?Paris Agreement?.</p>	<p>Output 3.2: Established international cooperation and knowledge sharing program in zero-carbon towns and villages development and green energy transformation with countries along the ?Belt and Road?, to support these countries in achieving their nationally determined contributions (NDC) commitments to the ?Paris Agreement?.</p>	<p>The statement has been changed to clarify and highlight that China will cooperate and share knowledge instruments with ?Belt and Road? countries to empower them to achieve zero-carbon development. In the previous statement of the Output, the foreign countries seemed to have a passive role.</p> <p>The new Output has also been renumbered, since 2 Outputs from the PIF have been merged into one.</p>
<p>Output 3.4: Established social mechanism for the promotion of zero-carbon town and village development and the sustainability of renewable energy industries.</p>	<p>Label changed to Output 3.3</p>	
<p>Output 3.6: Established and operational market-oriented mechanism for the enhanced development and utilization of rural RE resources, EC&EE improvement, and comprehensive energy management systems for supporting sustainable socio-economic development, and creation of zero carbon towns and villages in rural China.</p>	<p>Label changed to Output 3.4</p>	<p>Output 3.5 in the PIF is the same as Output 3.5 in the ProDoc.</p>

1a.4) *Alignment with GEF focal area and/or Impact Program strategies:* N/A

1a.5) *Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing:* N/A

1a.6) *Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF):* N/A

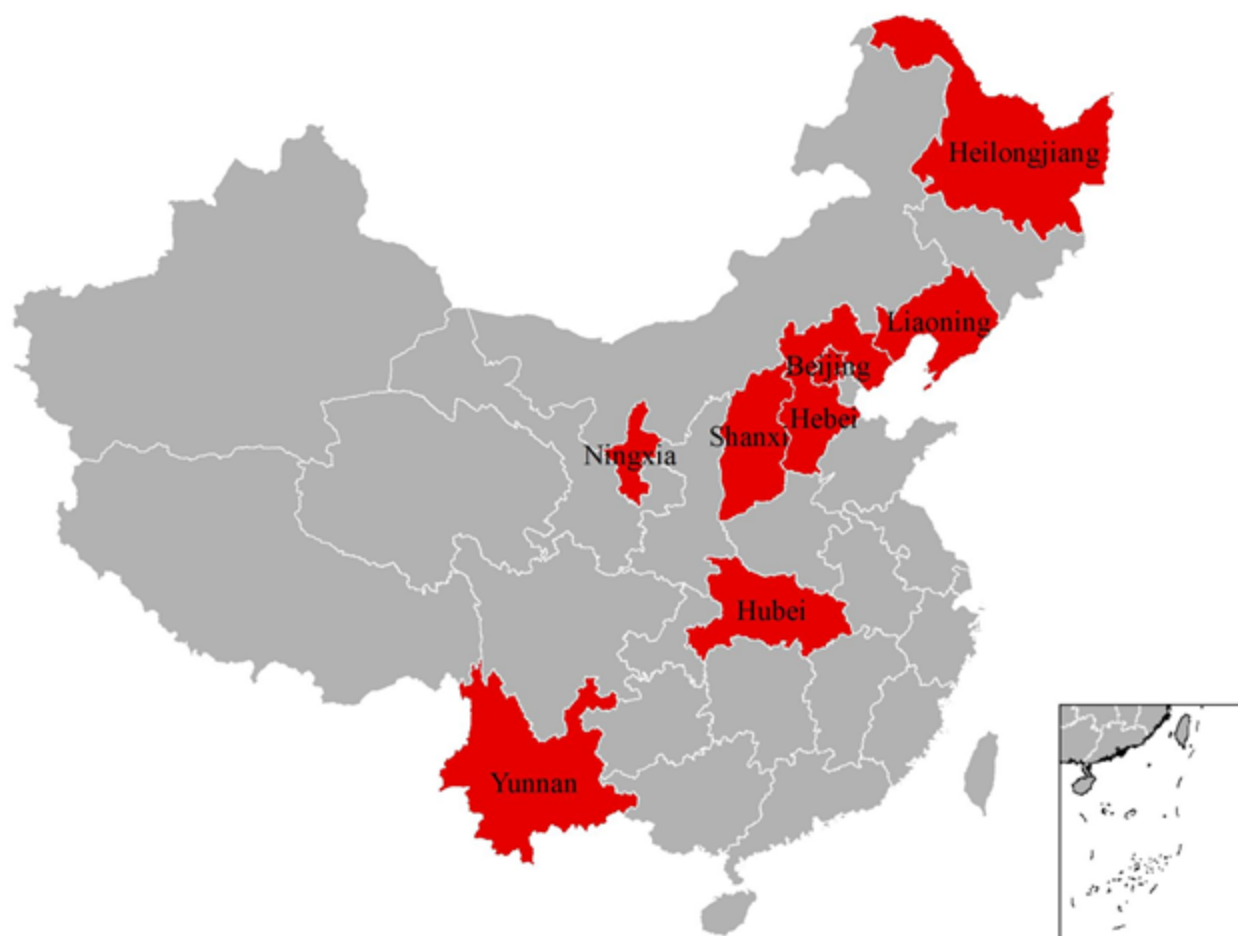
1a.7) *Innovativeness, sustainability, and potential for scaling up:* N/A

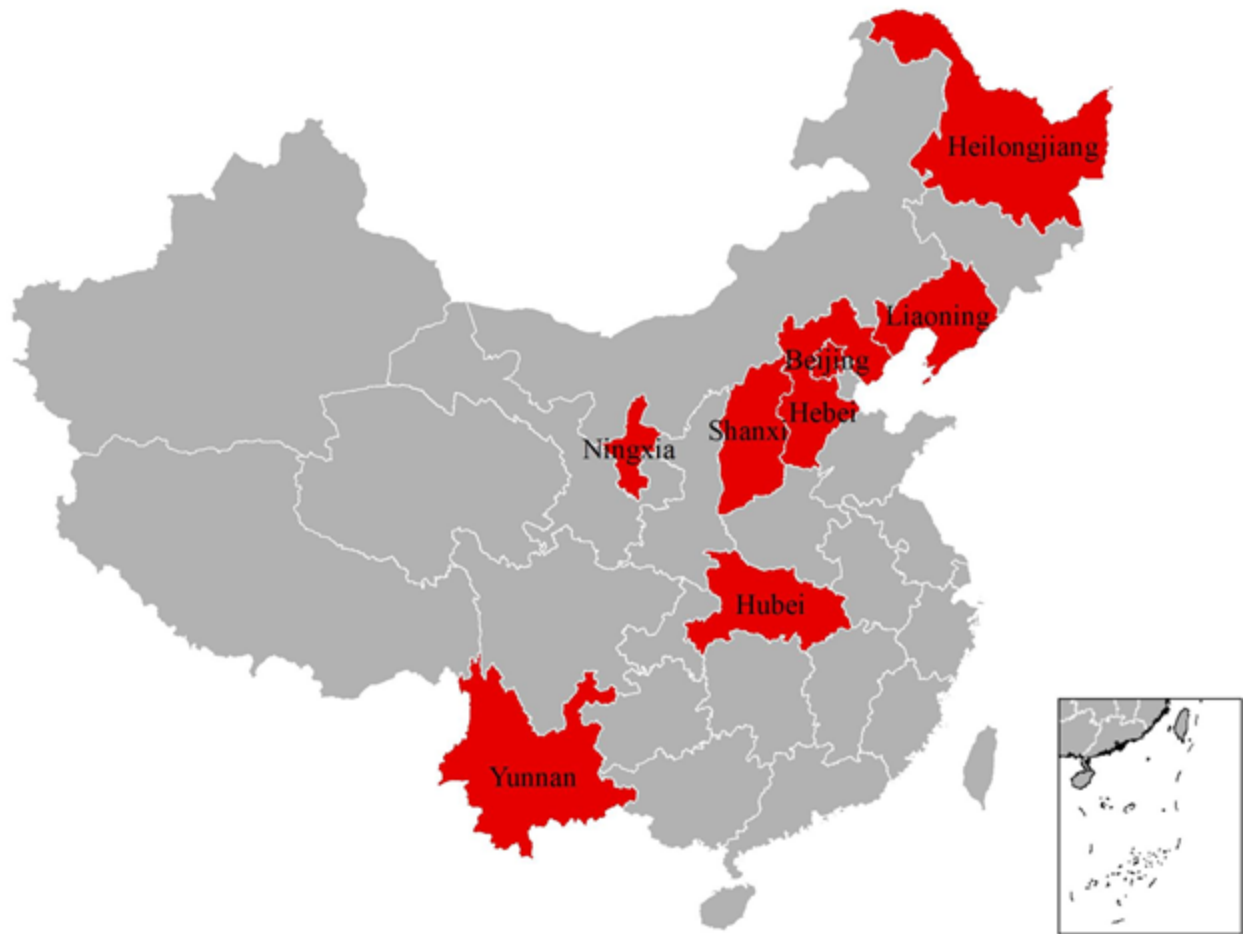
1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Annex E: Project Map(s) and Coordinates

Figure 1. Map of the Project Partner Provinces





Geo-Coordinates of the Project Sites:

- ? Yanqing, Beijing (Lat: 40° 28' 0" North, Long: 115° 58' 0" East)
- ? Hengshui, Hebei (Lat: 37° 43' 55.99" North; Long: 115° 42' 4.00" East)
- ? Anping, Hebei (Lat: 37° 32' 59.99" North; Long: 115° 34' 59.99" East)
- ? Yuncheng, Shanxi (Lat: 35° 1' 35.09" North; Long: 111° 0' 27.11" East)
- ? Chaoyang, Liaoning (Lat: 41° 34' 59.99" North; Long: 120° 25' 59.99" East)
- ? Suihua, Heilongjiang (Lat: 46° 40' 32.98" North; Long: 127° 1' 6.36" East)
- ? Hailun, Heilongjiang (Lat: 47° 27' 23.40" North; Long: 126° 57' 13.25" East)
- ? Jingmen, Hubei (Lat: 31° 02' 1.00" North; Long: 112° 12' 16.99" East)
- ? Yuxi, Yunnan (Lat: 24° 20' 59.99" North; Long: 102° 31' 59.99" East)
- ? Tonghai, Yunnan (Lat: 24° 05' 21.60" North; Long: 102° 44' 59.99" East)

Qintongxia, Wuzhong, Ningxia (Lat: 37° 59' 13.41" North; Long: 106° 1' 49.56" East)

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

n/a

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

The Stakeholder Engagement Plan is in Annex 9 of the Project Document.

The designated implementing partner of the EZCERTV Project, and therefore the main stakeholder, is the Ministry of Agriculture and Rural Affairs (MARA). Therefore, MARA will assume a leadership role throughout the entire project implementation phase providing guidance and supervision. It will be responsible for communication and coordination with UNDP, which is the GEF Agency for this project. It will liaise with partner local governments and rural villages and towns during implementation of the demo and demo replication activities, and it will gather, process, and manage information generated from the project activities (e.g., demonstrated RE and EE technologies and measures) and help disseminate these to the general public. Lastly, MARA will provide data inputs on plans and programs of the country concerning the energy provision in the projects of the government.

Other important project stakeholders are: 1) the Ministry of Finance, which is the GEF Operational Focal Point in China and in one of the GOC signatories to the EZCERTV project document. During the implementation of EZCERTV, MOF will seat on the project steering committee, and will be the recipient of the GEF grant on behalf of the government, managing of disbursement and expenses of the GEF grant and evaluating the project performance; 2) the National Development and Reform Commission (NDRC), a government agency in charge of devising and enforcing socio-economic development strategies. NRDC will also be a member of the project steering committee and its main role will be to promote carbon neutral technologies and measures to the rural communities and advise the GOC on energy resources conservation and utilization planning; and 3) the Rural Energy & Environment Agency (REEA), an agency operating under MARA as fund manager of international projects. REEA will be in charge of the day to day implementation activities of EZCERTV, assuring timely preparation of reports in conformity with UNDP rules and quality standards. Other key stakeholders that will be engaged during EZCERTV implementation are the: a) Ministry of Ecology

and Environment (MEE); b) Local governments; and c) State Council for Poverty Alleviation and Development Office.

The project also involves private sector investors, scientific research institutions, NGOs, and the All China Women's Federation (ACWF). Rural towns and villages social communities and groups will be involved especially during the implementation of the project demos and the awareness raising initiatives.

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The following is the summary of the stakeholder plan, showing the means of engagement and engagement schedule. Full detail is provided in Annex 9 of the submission package

Table 2: Stakeholder Plan

Project Stakeholder	Stakeholder Interest	Roles and Responsibilities in Implementation	Means of Engagement in the Project	Engagement Schedule during Implementation
GEF	GHG emission reduction	Project financing	Annual reporting	Yearly
UNDP	Sustainable Development	None. As GEF Agency, role is limited to Project oversight.	Regular consultation and follow-up meetings with implementing partner	Weekly
MARA	Rural energy industry development and rural revitalization	MARA is the project Implementing Partner and chairs the Project Steering Committee (PSC). MARA is responsible for the organization and implementation of the project .	Project activity monitoring and reporting; daily project management, coordination with project partners, QPR and PIR reporting.	Daily
NDRC	Renewable energy industry development	PSC member? Provide support on renewable energy	PSC Meeting	Annual

		and energy efficiency technologies and policies in rural area under component 1 and component 2	Implementation of Components 1 & 2 activities.	Quarterly
Ministry Ecology and Environment (MEE)	GHG emission reduction	PSC member?provide policy support on climate change and GHG monitoring	PSC Meeting	As scheduled
All-China Women's Federation (ACWF)	Gender Mainstreaming and women economic empowerment	Member of PSC, In addition ACWF, through its local chapters at provincial and local level will be a key project stakeholder with which the project will work together to ensure that the mainstreaming of women into the project activities and their implementation is optimized.	PSC Meeting	As scheduled
Provincial Department of Agriculture and rural affairs (DARA) in 8 provinces	low-carbon transformation in for Rural energy industry, ecological livable in rural township	Will establish local PMO, and support implementation of demo and replication projects in the Province	Project activity monitoring and reporting	Quarterly

Government in county level	Comprehensive development on economic and social, rural ecology livable, and low carbon transformation	Organize the implementation of project in target county	Project activity monitoring and reporting	Quarterly
Universities and research institutions	Application models of Zero-carbon energy technology, monitoring and evaluation methods of zero-carbon township, and the best practices study	Technical Working Group, demo activity	Project activity monitoring and reporting	Quarterly
Local energy-businesses, farmers cooperatives and other enterprises in the projects targeted counties	EE and EC promotion in rural villages, improve the energy service ability.	Demo activity, Provide technical expertise in RE/EE/EC design, installation, diagnoses, maintenance, and training	Implementation of Components 2 and 3 activities.	As scheduled

Financial institutions	Shorten the investment return cycle in rural energy sector.	Assess the financial ability of energy companies, develop the Green financial mechanism. The staff of financial institutions will be trained.	Implementation of Component 3 activities.	As scheduled
Local communities	have clean and comfortable living environment and have training on RE/EE/EC	The end-user of RE/EE/EC technology will be trained.	Project activity monitoring and reporting.	Quarterly

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Table 1 below summarize the main engagements of the key stakeholders in the implementation of the project. It also shows the capacity building needs of each stakeholder as identified during the project development phase.

Table 1: Stakeholder Engagement and Training and Capacity Building Needs of the Stakeholder group

Stakeholder	Engagement in the Project	Training and Capacity Building Needs
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Ministry of Finance (MoF)	As the GEF Operational Focal Point MOF will receive the GEF grant for the current project on behalf of the Chinese Government. MOF will be a core member of the Project Steering Committee. MOF will have a core role in providing guidance, coordination and supervision on the disbursement and expense of GEF grant, performance evaluation, summary, and promotion of project results. The project team will provide project documentation and reporting to MOF through UNDP.	With MOF being responsible for public financing, including the fund allocations to the different ministries, projects and programs financed under these ministries, there is a need to sensitize relevant staff and departments within MOF on, particularly the impacts of zero-carbon township and RE/EE/EC on the local, provincial and national economy. This need is equally relevant for the provincial and county financial departments, as a better understanding of the economic environment impact that RE/EE/EC can have if not addressed adequately would/could raise the importance of zero-carbon township and the funds needed for it.
United Nations Development Programme (UNDP)	As the GEF Agency for the project it is overall responsible for the project oversight. UNDP will ensure project quality control to ensure that the Implementing Partner achieve the set project objective and outcomes. As part of its oversight work, UNDP will ensure that the project implementation and management follows UNDP/GEF rules and regulations. UNDP will be a core member of the Project Steering Committee. The project Implementing Partner will provide project documentation and reporting to UNDP as outlined in the project document or otherwise agreed.	
Ministry of Agriculture and Rural Areas (MARA)	MARA is the project Implementing Partner and chairs the Project Steering Committee. MARA will, through the PMO that it established within its Department of Science, Technology and Education, lead and supervise the overall implementation of the project and ensure coordination between the relevant government agencies involved in the project at both national and local levels). MARA will coordinate and supervise the use of GEF funds allocated each year by the UNDP and carry out regular reporting of achievements in accordance with UNDP rules and procedures.	Within MARA there is a need for raising the awareness of their staff particularly on the importance of the application of economically feasible RE/EE/EC and zero-carbon technologies. In addition, more general awareness on IAS needs to be raised, and trainings related to the implementation of developed/revised regulations and guidelines on RE/EE/EC technology applications will also be needed.

Rural Energy & Environment Agency (REEA), MARA	Entrusted by DSTE[1] ¹ , REEA is responsible for the daily management of PMO and GEF fund management. REEA will coordinate and supervise the use of GEF funds allocated by UNDP and prepare regular reporting of achievements in accordance with UNDP rules and procedures.	The staff of REEA and in particular staff in the Project's Management Office will be participating in as many of the project developed trainings as possible to increase the PMOs knowledge but also to provide feedback on the developed training materials.
Ministry Ecology and Environment (MEE)	MEE is the focal point agency on climate change in China. It will be a core member of the project steering committee?MEE will provide advice and guidance on the implementation of the project, especially in supporting the improvement of policies, regulations, standards, and systems related to climate change in rural areas.	Within MEE there is a need for further understanding of the significance of rural renewable energy applications to China's achievement of nationally determined contributions; understand the policies and regulations of renewable energy development, and strengthen support for the development of rural renewable energy.
National Development and Reform Commission (NDRC)	NDRC is an important member of PSC and will provide support for RE/EE/EC related policy research and technical improvement. NDRC will integrate relevant resources, promote the application of renewable energy and energy efficiency technologies in rural areas, and provide professional training for relevant stakeholders as needed, and support for the marketization and scale promotion of the project.	NDRC needs to know more about the situation regarding RE/EE/EC application in rural areas and survey the barriers to the development of RE/EE/EC and cooperated with MARA to revise the related policies
All-China Women's Federation (ACWF)	ACWF is a member of the project's steering committee. In addition ACWF, through its local chapters at provincial and local level will be a key project stakeholder with which the project will work together to ensure that the mainstreaming of women into the project activities and their implementation is optimized. ACWF and its local entities will, as part of the projects stakeholder engagement, be involved in development both the at the National and Provincial levels?	Although not specifically target towards ACWF, their representatives will be invited to a participate in the project training activities as part of the project overall awareness raising initiatives. This will also enable ACWF to provide feedback on the trainings with the aim to improve the gender aspect of said trainings.

Provincial Department of Agriculture and rural affairs (DARA) in 8 provinces	As the focal point in each demo province, Provincial Department of Agriculture and Rural Affairs (DARA) will be responsible for supervision and guidance of project implementation in the province, assisting the government at the county level in project coordination and resource integration. Each provincial DARA will be engaged in most of the project activities at provincial and country level, and will play a specific role in the Provincial Coordination Group. In addition, the staff from the DARA will take part in the project's capacity building engagements through the provisions of project developed trainings.	Provincial Department of Agriculture and rural affairs will be the target for a range of project training activities including, but not limited to, trainings on GEF project management, RE/EE/EC related policy and technology, project M&E and other requirements. Relevant staff will also receive more practical on the ground trainings
Universities and research institutions	The scientific research institutions will provide input and guidance as well as expertise to a range of the project activities. This will include support to the evaluation of energy resource in the target villages, development of the technology demo plan, guide the instruction of demos, and replication sites. Broadly speaking the research institutions will provide important technical support for the application of RE/EE/EC, as well as assist government departments on policy research, technical promotion and training of grassroots agricultural technicians, preparation of publicity information materials.	No specific project related trainings are envisaged.
Local energy-businesses, farmers cooperatives and other enterprises in the projects targeted counties	Local energy-businesses, farmers cooperatives and other enterprises will be part of the projects direct beneficiaries as they will be the main target for the on-the-ground training on and implementation of the project promoted RE/EE/EC techniques. They will also be one of the main stakeholder groups which will be engaged in the development of the zero-carbon villages and provide the energy management services for villagers.	These entities are direct beneficiaries of the project as they will be the main target for the on-the-ground training activities. They will require training in the management, installation, operation and maintenance of facilities/systems that apply the new low/zero carbon energy technologies.
Financial institutions	Financial institutions will be the central participants of the project particularly in the development and implementation of a green financial model for the application of zero-carbon energy technologies. They will provide investment and financing advisory services for the project sites and related energy service enterprises, and provide finance support for energy companies if possible, so as to promote the promotion of zero-carbon energy technology in rural areas.	The management staff of financial institution lack knowledge about zero-carbon energy technology applications in rural area and the performance of energy management services. Training on these areas is necessary for the staff of the financial institutions.

Civil society groups and NGOs (CSO/NGO)	Where identified, the national and local NGO/CSOs will be engaged to the maximum extent possible and particularly in collaboration with local NGO/CSO would be sought to have them directly involved in the project's social public awareness raising activities. The local NGO/CSO including the ACWF will receive training on renewable energy and energy efficiency technology applications in rural areas to enable them to better engage and interact with the communities they serve. They are also expected to assist in the replication and scale-up of the demos that will be carried out under the project.	Training needs not identified, but it is anticipated that training on general issues related to renewable energy, energy saving and the marketing of related technologies, as a minimum will be provided.
Local communities	Local farmers will be part of the project's direct beneficiaries as they will be the main target for the on-the-ground training on and implementation of the project promoted zero-carbon energy technologies/techniques. They will also be one of the main stakeholder groups that will be engaged in the local energy demand assessment and project activities monitoring efforts, also the end-user of RE /EC/EE.	Farmers and the farming communities require training on the implementation of, the project promoted zero-carbon energy technologies/techniques, as well as enhance their awareness about the application of low/zero carbon energy technologies in rural areas.

[1] This is MARA's Department of Science Technology and Education. It will establish the EZCERTV PMO, and REEA will be responsible for the daily management of PMO on behalf of the DSTE.

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor; Yes

Co-financier; Yes

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender equity has been mainstreamed on a number of components of the EZCERTV Project and a range of activities have been designed and planned to ensure this. Table 1 below shows the success indicators and targets for these activities and a gender action plan with specific activities is listed in Table 2.

Based on the initial surveys and assessment of potential gender issues of the project (as mentioned in the SESP), the EZCERTV Project as a whole does not have too much of a negative impact on gender equity, and in some ways has a positive effect. The potential negative impacts include potential occurrence of discriminations against women based on gender, especially regarding participation in the design and implementation of the project activities or access to opportunities and benefits. Another is the uncertainty about women's labor inputs (e.g., demonstration activities such as those on the application of technologies utilizing biomass fuels, biogas, etc.), might potentially increase women's labor inputs for household energy access. As a key measure to mitigate these impacts, the implementation of the EZCERTV Project needs to ensure capacity building for gender equality, knowledge sharing, broad participation, and leadership of women in the process, and enhanced monitoring, reporting, and tracking of the activities that have potential influence on, and impacts on, gender equity.

Since the implementation of zero-carbon energy technology application demonstrations in selected rural villages and towns usually inevitably involves substitution of energy supply resources and forms (i.e., applications of RE and EE technologies), the process can have a positive impact as well. On the one hand, the substitution of traditional energy sources can reduce the labor input for traditional biomass energy collection such as straw and fuelwood, which has largely involved women; on the other hand, the construction and operation of new energy supply systems (e.g., piped biogas/biomethane, pelletized straw fuel) creates many new jobs. These jobs also have a positive impact on women. But this process requires professional employability development interventions to ensure that women also benefit from such opportunities.

The training, capacity building, and access to employment interventions will improve the number of qualified women in rural China. The monitoring and evaluation of the project activities will include tracking a number of human development indicators. Among these is on gender equity. For example, the number of women trained, participating, and benefiting from new employment during the course of the EZCERTV Project implementation.

Table 1 Gender-related Indicators and Targets

Indicators	Means of Verification
Number of staff (and 30% women) from national and local governments with enhanced capacity in zero carbon development, such as in low/zero carbon energy technology project planning, procurement, financial management, community development, and safeguards.	Survey of MARA and provincial DARAs that are involved in the project.

Indicators	Means of Verification
Number of local project developers, equipment suppliers and vendors (30% females) trained on the design, installation, operation, and business models for the applications of RE and EE technologies.	Documentation on the training program including the profiles of the trainees; Documentation on the training course implementation including post training evaluation.
Number of village level promoters, technicians, administrators trained on relevant subjects for successful management and operation of the RE and EE technology systems (The female participation rate for training and publicity at the project implementation site is not less than 40%)	Survey of town and village technicians and administrators. Documentation on the training program including the profiles of the trainees; Documentation on the training course implementation including post training evaluation.
Number of trained people that are applying the knowledge and skills they learned from the training in their current jobs. Number of trained people that are gainfully employed utilizing the knowledge and skills they learned from the training in newly created jobs. (The percentage of women in both aspects is at least 30%).	Survey of trainees (survey conducted a year after the training program)
Number of new employment opportunities created by the applications of RE and EE technologies to bring about zero carbon rural development (with 40% of women)	Survey of employment and workforce in each participating provinces
Number of households (and number of female-headed HH) provided with RE and EE technologies services during the EZCERTV Project implementation period.	EZCERTV Project activity reports and monitoring reports
Number of households (and number of female-headed HH) that have applied new RE and/or EE technology applications on their own.	Household energy surveys in each participating provinces.

The targets for the above stated indicators will be set during the inception phase of the EZCERTV Project. The implementing partner (Ministry of Agriculture and Rural Affairs) will carry out surveys to monitor the achievement of the set targets. The surveys will cover energy project developers, equipment suppliers, low/zero carbon development project promoters, technicians, and administrators, as well as the energy consumers such as the rural households. The end-user awareness data shall be collected through surveys and focus group discussions at the beginning and final year of the project. Surveys will include aspects of gender equity and gender equity mainstreaming in all aspects of low/zero carbon town and village development in rural China. The surveys will also enable timely detection of any gender-specific issues cropping up so that they are addressed promptly.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

No

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women

Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

In recent years, private sector entities have been increasingly involved in the design, engineering, installation, operation, and maintenance of commercial RE-based energy generation plants, as well as EE technology systems in China. In each of the demos and demo replications that will be implemented under the EZCERTV Project, the baseline activities are financed by a private sector entity. These include: 1) CHN ENERGY Investment Group Co., Ltd.; 2) Hebei Jing'an Bioenergy Technology Co., Ltd.; 3) Shanxi Golden Cooperate DC Power Distribution Engineering Technology Co., Ltd.; 4) Chaoyang Jiajiadian Farm Co., Ltd.; 5) Hailun Limin Energy-saving Boiler Manufacturing Co., Ltd.; 6) Songzi Senchun Agricultural Development Co., Ltd.; 6) Yunan Fu Hui Technology Co., Ltd.; and 7) Ningxia Runwell Energy & Environment Engineering Co., Ltd.

The successful completion and operation of the demos is expected to replication and scale-up in other rural areas in China and in the "Belt and Road" countries, for which additional private investors will be identified and engaged.

Furthermore, as illustrated in the budget notes of the ProDoc, local and international contractual service companies will also be engaged. There are many credible and qualified engineering and consulting firms in China, and abroad, that can and will provide their services in the design and implementation of the incremental activities of the project (e.g., demos and demo replications), and possibly the scale up of some of these. Consulting firms will also be involved in technical assistance activities. These entities are among the stakeholders of the proposed project, and as such they will also benefit from the various interventions that will be carried out under the project in terms of knowledge and skills uptake in low carbon energy technology applications, while complying with set low carbon development policies, standards, and regulations.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

During the preparation of the PIF several potential risks that could prevent the achievement of the project objective and outcomes were identified and proper measures to prevent and alleviate their impact on the project were proposed. During the project preparation phase, these risks have been reassessed, validated, and confirmed; and are summarized in the Risk-log in Sec. IV of the ProDoc. Additional risks have been identified during the preparation of the Social and Environmental Screening Procedure (SESP), which is annexed to the ProDoc. The risks related to climate impacts and the Covid-19 pandemic were also analyzed and the suggested mitigation actions are presented in Annexes G and H of this document. For all identified risks, the design of the EZCERTV project incorporated the suggested risk mitigation measures. As per standard UNDP requirements, the Project Manager will monitor risks quarterly and report on the status of risks to the UNDP Country Office. The UNDP Country Office will record progress in the UNDP ATLAS risk log. Risks will be reported as critical when the impact and probability are high (i.e. when impact is rated as 5, and when impact is rated as 4 and probability is rated at 3 or higher). Management responses to critical risks will also be reported to the GEF in the annual PIR reporting process.

6. Institutional Arrangement and Coordination

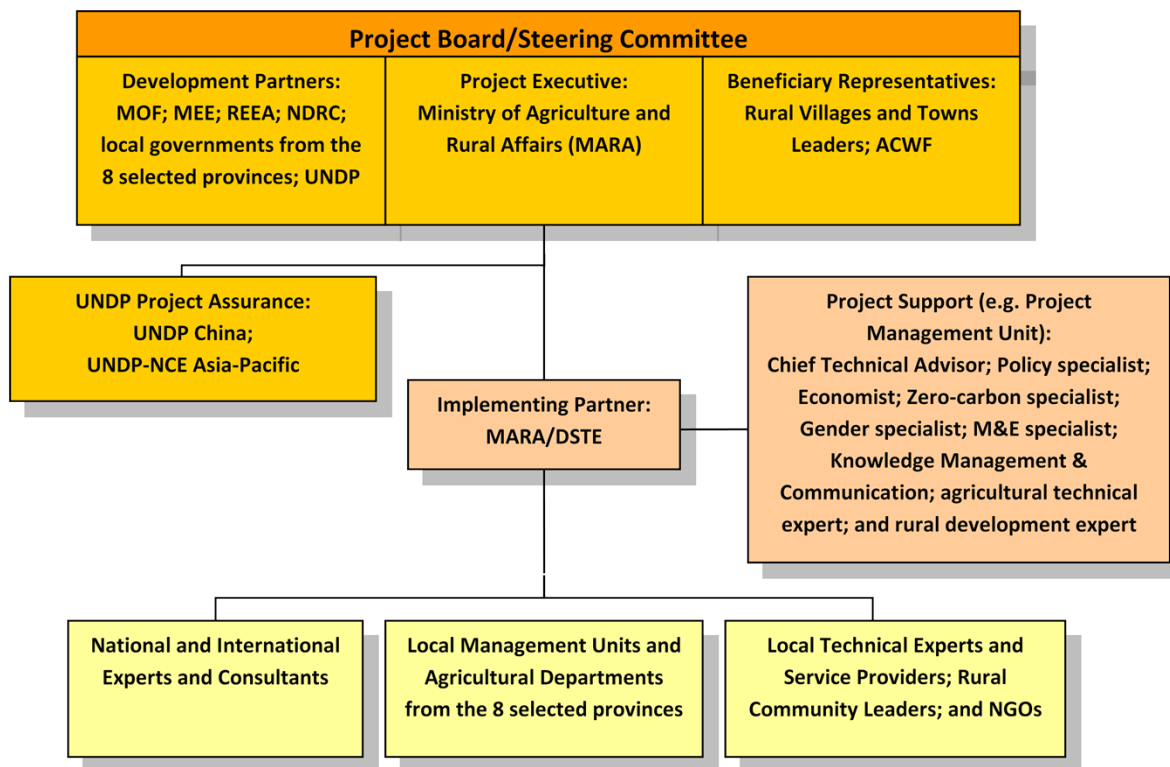
Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

The project will be implemented following UNDP's National Implementation Modality (NIM), per the Standard Basis Assistance Agreement between UNDP and the Government of China, and the Country Programme. The Implementing Partner for this project is the Ministry of Agriculture and Rural Affairs (MARA). The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

The EZCERTV Project will be governed by a Project Board (PB). This board will be made up of representatives from: MARA, MOF, MEE, REEA, NDRC, representatives from the local governments from the partner provinces, and invited representatives from beneficiary groups such as rural villages and towns leaders and ACWF, as may be relevant or applicable, and the UNDP-Beijing Country Office (CO). The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency, and effective international competition. In case consensus cannot be reached within the Board, the UNDP Resident Representative (or their designees) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

MARA will establish a Project Management Office (PMO) and recruit its personnel for the management of project activities. The PMU will be headed by a Project Manager (PM) who has the authority to run the project on a day-to-day basis on behalf of MARA within the constraints laid down by the Project Board. The Project Manager must be different from MARA's representative in the Project Board, and his/her primary responsibility is to ensure that the project produces the results specified in the ProDoc, to the required standard of quality and within the specified constraints of time and cost. The Project Manager will inform the Project Board and the UNDP Project Assurance team of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted. The Project Manager will remain on contract until the Terminal Evaluation report and the corresponding management response have been finalized and the required tasks for operational closure and transfer of assets are fully completed. Figure 1 shows a schematic of the Project Organization Structure.

Figure 1: Organization Structure



Development Partners:
MOF; MEE; REEA; NDRC; local governments from the 8 selected provinces; UNDP
Project Executive:
Ministry of Agriculture and Rural Affairs (MARA)

Beneficiary Representatives:
Rural Villages and Towns Leaders; ACWF

UNDP Project Assurance:
UNDP China;
UNDP-NCE Asia-Pacific

Project Support (e.g. Project Management Unit):
Chief Technical Advisor; Policy specialist; Economist; Zero-carbon specialist; Gender specialist; M&E specialist; Knowledge Management & Communication; agricultural technical expert; and rural development expert

Figure 1: Organization Structure
National and International Experts and Consultants

Local Technical Experts and Service Providers; Rural Community Leaders; and NGOs

Local Management Units and Agricultural Departments from the 8 selected provinces

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

This proposed EZCERTV is aligned with multiple national priorities and development plans. Among the most relevant ones there are: 1) the "Rural Revitalization Strategy". On October 18, 2017, during the 19th Communist Party of China (CPC) National Congress held in the Shandong Province, president Xi Jinping has ranked pursuing "Rural Revitalization Strategy" third among China's "New Vision of Development and Developing a Modernization" priorities^[1]; 2) President Xi Jinping address to the United Nations General Assembly in 2020. In that occasion, president Xi has confirmed that China is targeting to achieving carbon neutrality by 2060, but he has also pledged that GHG emissions in China will peak before 2030, as it has been previously stated in China's Nationally Determined Contributions (NDC). This has been welcomed as a very strong and promising commitment by environmentalists worldwide, coming from the world's largest GHG emitter^[2]; and 3) the 13th Five-Year Plan for Energy Conservation and Emissions Reduction. Promulgated by the State Council of China, the plan aims at promoting energy conservation in agriculture and rural villages and towns and increasing the use of indigenous renewable energy sources.

[1] http://www.china.org.cn/opinion/2018-03/15/content_50711502.htm

[2] <https://www.nytimes.com/2020/09/23/world/asia/china-climate-change.html>

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

The knowledge management system that will be employed in the proposed GEF-funded EZCERTV project will consist of the conduct of training courses for pertinent personnel in rural towns and village communities that will participate in the project activities. Coordination with the implementers of ongoing GOC climate change and energy projects will be carried out to determine potential synergies in the knowledge management activities, particularly in the approach and methodologies that will be applied. There will be special training for people who will be tasked to operate and maintain the various demo RE-based energy systems (power and non-power) and EE technology systems that are part of the project. Among the outputs of this project is an established and operational information exchange network for the promotion and dissemination of knowledge on low carbon development within the country's rural sector (and possibly later to also be shared with other countries, especially along the "Belt and Road"). Part of the project activities will be the establishment and operationalization of an energy supply and consumption monitoring and reporting, database to be housed in the appropriate GOC central ministry, most probably within MARA's Department of Science, Technology and Education (DSTE). This aspect of knowledge management, which involves drawing on information from a wide variety of sources, will be implemented, not only for the purpose of the country's rural energy planning but also to achieve an organized usage of knowledge about the energy situation in the country's rural sector. This will be made possible through the information exchange network that will be established and operationalized under the project. With such network, data/information on lessons learned and best practices in the application of low carbon

development techniques and practices, as well as implementation of sustainable energy and low carbon technologies specifically in rural settings, can be obtained from other developed and developing countries, and applied to specific situations and rural towns/villages in the country. Additional source of knowledge that this project will explore is through the partnership of a relevant SE4All EE Accelerator. The results of the project activities will also be disseminated to other developing countries through the information exchange network. Lastly, this project will establish China Rural Distributed Renewable Energy Construction and Development Industry Association that can also be a future forum for knowledge generation and sharing in the area of rural RE development and in the implementation of RE technologies in rural towns and villages.

Please refer also to Annex I for more details about the knowledge management plan of the project.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

To track the successful completion of the project activities and delivery of the intended outputs, the continuous monitoring of project components and activities towards achieving the expected outcome and outputs will be done. This will be carried out in line with the UNDP-GEF monitoring and evaluation (M&E) system. A formal M&E Plan will be adopted during the project inception corresponding to a full-scale project to track the activities and contributions of the activities by all the project partners, in terms of both in-cash and in-kind co-financing contributions to augment the GEF funds. These M&E findings will be reported in the project's two in-depth independent reviews during the mid-term and towards the end of the project.

The table below shows the project's M&E Plan. The M&E will be conducted at multiple levels. At the most basic level, the project manager will be responsible for tracking project indicators and preparing quarterly reports and initial drafts of annual project reports. The project manager will also carry out site visits to the project demos to monitor their progress. The project board will meet annually to monitor and evaluate project progress, taking actions, as necessary. In addition, a mid-term review will be conducted during the third year of implementation of this 5-year project, and a terminal evaluation as the project is nearing its close. These evaluations will be carried out by parties who have not previously been involved with the project. The project's M&E plan and indicators will be finalized at the time of inception.

Monitoring and Evaluation Plan and Budget		
GEF M&E Requirements	Indicative costs (US\$)	Time frame
Inception Workshop	20,000	Within 60 days of CEO endorsement of this project.
M&E of GEF core indicators and project results framework	5,000 per year	Annually and at mid-point and closure.
GEF Project Implementation Report (PIR)	None	Annually typically between June-August
Monitoring all risks (Atlas risk log)	3,000 per year	On-going.
Monitoring of social and environmental safeguard screening	3,000 per year	On-going.
Monitoring of stakeholder engagement plan	3,000 per year	On-going.
Monitoring of gender action plan	3,000 per year	On-going.
Project Board Meetings	3,000 per year	Annually
Reports of Project Board Meetings	None	Annually

Monitoring and Evaluation Plan and Budget		
GEF M&E Requirements	Indicative costs (US\$)	Time frame
Lessons learned and knowledge generation	5,000 per year	Annually
Supervision missions	None	Annually
Oversight missions	None	Troubleshooting as needed
Mid-term GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools	15,000	Before mid-term review
Independent Mid-term Review (MTR)	35,000	2Q 2024
Terminal GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools	15,000	Before terminal evaluation
Independent Terminal Evaluation (TE)	35,000	3Q 2026
Translation of MTR and TE reports into English	None	As needed
TOTAL indicative COST	245,000	

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The successful implementation of EZCERTV will benefit entire communities in rural China in four different aspects: 1) environmentally, since burning less fossil fuels will allow reduction of the emissions of GHG; 2) financially, since conventional forms of energy is very expensive in rural areas, particularly because of the difficulty of delivering energy to this villages and towns, which often are secluded. In fact, as evidenced in the demos, the energy bill for the households in all demo locations are expected to be lowered mainly due to the implementation of the demos; 3) energy security, because with more indigenous energy generation, the rural communities will be less exposed to delayed deliveries, service disruptions, and potential increases in fossil fuels prices; and 4) health improvement, for using less uncontrolled indoor fossil fuels, biomass and firewood burning. The demos will introduce high energy efficient appliances and equipment and cleaner burning energy sources, such as biogas and bio-methane. This will allow reduction of respiratory, cardiovascular, and vision impairment risks due to the emissions in closed spaces of flue gases and especially particulate matter.

Since the main essence of the proposed project is the reduction of fossil fuels use in rural areas, the global environmental benefits of this proposed GEF-funded project would mainly come from GHG emission reductions (tons CO₂). Fossil fuels will be substituted with renewable energy generated electricity (solar PV systems and biogas-powered generators), and other renewable energy sources (biogas, bio-methane, and pelletized biomass) particularly for domestic cooking and heating as well as for some commercial uses (biogas fired kilns for flue cured tobacco) and electric mobility. Since the demos will be replicated, during the project implementation phase, in other rural villages, these benefits will be enjoyed also by those rural populations. Furthermore, indirect emission reductions will be achieved through replication (and possibly scale-up) of RE/EE initiatives in rural areas as influenced by the EZCERTV Project after its completion, both in China and in ?Belt and Road? countries. Therefore, indirectly these demos will benefit a much larger population than the direct EZCERTV beneficiaries.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Thirteen potential risks have been identified for this project, which are assessed as MODERATE so the overall risk is Moderate. An ESMF is being prepared during the PPG stage to ensure that the necessary steps are taken to manage the site-specific risks during implementation (during which site-specific assessments and management plans will likely be required).

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
PIMS 6431 CPR EZCERTV SESP 130621 _clean_clean and cleared (1)	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

This project will contribute to the following Sustainable Development Goal (s): Goal 7: ?Ensure access to affordable, reliable, sustainable and modern energy for all?; Goal 8: ?Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all?; Goal 11: ?Make cities and human settlements inclusive, safe, resilient and sustainable?; Goal 13: ?Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy?; and to a lesser extent to Goal 2: ?End hunger, achieve food security and improved nutrition and promote sustainable agriculture?.				
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): UN Development Assistance Framework China (2016-2020): More people enjoy a cleaner, healthier, and safer environment as a result of improved environmental protection and sustainable green growth (Outcome 2).				
	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target
Project Objective: Acceleration of zero-carbon transformation in China's rural area to contribute to global climate change mitigation and the achievement of the United Nations sustainable development goals (SDG)	Mandatory Indicator 1: # direct project beneficiaries disaggregated by gender (individual people)	0	250,000 (women 128,000) (men 122,000)	918,500 (women 460,000) (men 458,500)
	Mandatory GEF Core Indicators: Cumulative GHG emission reduction from the rural sector of China, tCO ₂	0	100,000	4,079,000
	Cumulative reduction in fossil fuel consumption due to the implemented zero/low carbon energy technologies and techniques in rural areas, tce	0	11,297.8	446,223.6
	% RE generation in rural areas in China	0	75%	85%
Project Component 1. Policy Formulation and Institutional Mechanisms on Zero Carbon Town and Village Development				
Project Outcome 1: Effective enforcement of policies and institutional frameworks towards the development of zero carbon towns and villages in rural China	Number of approved and enforced new and updated zero/low carbon policies, at both national and local levels	0	5	10
	Cumulative number of rural towns/villages that adopt and enforce developed guidelines and standards on RE/EE/EC technologies and measures	0	8	50

Outputs to achieve Outcome 1	<u>Output 1.1:</u> Formulated, approved, and enforced policies on the promotion and support of zero carbon town and village development in line with China's rural revitalization strategy and goal of achieving carbon neutrality before 2060.			
	<u>Output 1.2:</u> Established and operational institutional framework to promote and support zero-carbon town and village development.			
	<u>Output 1.3:</u> Formulated, approved, and enforced technical, management and operational standards in rural renewable energy (RE) development and utilization, energy storage, energy conservation and energy efficiency (EC&EE) and comprehensive energy management.			
	<u>Output 1.4:</u> Completed assessment of renewable energy resource endowment, economic and social development level, and energy use trends and patterns in rural areas of selected provinces; and formulated energy-integrated development plans of pilot towns in selected 8 provinces.			
Project Component 2. Integrated Renewable Energy and Energy Efficiency Technologies Applications for Zero Carbon Town and Village Development				
Project Outcome 2: Low/zero carbon technology applications are widely implemented in rural towns and villages in rural areas of China	Cumulative number of rural towns/villages that replicate and scale-up the implemented demo projects	0	20	200
	Cumulative number of private sector entities investing in zero/low carbon energy in rural towns/villages	0	50	200
Outputs to achieve Outcome 2	<u>Output 2.1:</u> Completed and operational zero carbon technology demonstration involving the installation of about 167.2 MW of RE-based power generation capacity in 120 rural villages and 4 towns for energy production and utilization showcasing the cost-effective application of new RE delivery mechanisms decentralized RE-based energy generation and distribution (through mini/micro-grids) and energy storage.			
	<u>Output 2.2:</u> Completed and operational demonstrations of the cost-effective applications of EC&EE technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development. Estimated annual energy savings of about 6,487.0 TJ/year in 4 towns and 120 villages.			
	<u>Output 2.3:</u> Developed, published, and disseminated zero carbon town and village development guidelines to replicate and scale-up the impact of zero-carbon villages and towns.			
Project Component 3. Facilitating Rural Zero Carbon Development and Lifestyle Popularization and Knowledge Dissemination				
Project Outcome 3: Enhanced and strengthened public awareness and knowledge about low carbon technology energy applications in support of zero carbon town and village development in rural China	Cumulative number of local firms in rural areas that can capably provide technical, engineering and maintenance services for zero/low carbon technology application projects	0	20	100
	Number of stakeholders from BRI countries trained on zero-carbon/low-carbon energy technologies and zero-carbon villages and towns	0	100	500

Outputs to achieve Outcome 3	<p><u>Output 3.1:</u> Completed information, communication, and education (ICE) program on zero carbon development in rural towns and villages in China for local authorities, service companies, rural energy cooperatives, public institutions, private entrepreneurs, farmers, and the public.</p> <p><u>Output 3.2:</u> Established international cooperation and knowledge sharing program in zero-carbon towns and villages development and green energy transformation with countries along the 'Belt and Road', to support these countries in achieving their nationally determined contributions (NDC) commitments to the 'Paris Agreement'.</p> <p><u>Output 3.3:</u> Established social mechanism for the promotion of zero-carbon town and village development and the sustainability of renewable energy industries.</p> <p><u>Output 3.4:</u> Established and operational market-oriented mechanism for the enhanced development and utilization of rural RE resources, EC&EE improvement, and comprehensive energy management systems for supporting sustainable socio-economic development, and creation of zero carbon towns and villages in rural China.</p> <p><u>Output 3.5:</u> Established and operational investment and financing mechanisms for supporting the commercial viability and operation of zero-carbon towns and villages and the development of rural renewable energy industries.</p>
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ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Annex B: Response to Project Reviews (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion, and responses to comments from the Convention Secretariat and STAP at PIF).

Exhibit B-1: Responses to GEFSec Comments - 12 October 2019

Comment & Response	Reference
2. Are the components in Table B and as described in the PIF sound, appropriate, and sufficiently clear to achieve the project/program objectives and the core indicators?	

Comment:

1. Please consider reducing the budget of GEF \$1.5 million for component 1 to \$1 million. Reason: the Chinese government has put so much funding for the component. The GEF funding should be used more in investment demonstration (Component 2).

Response:**Before PPG Stage**

The proponent anticipates several major research work and stakeholder consultations to come up with the pertinent policies, regulations, and standards to support zero carbon development in the rural towns and villages in China. Apart from that they envision significant amount of time and effort will be required for the advocacy and promotion of the proposed policies/regulations and standards. Also to be covered is the capacity building that will be needed for the town and village authorities on zero carbon town and village development that are in line with the country's circular economy and rural revitalization objectives. These are additional/incremental interventions that are necessary to enhance the current low carbon development efforts of China in the rural areas. In this regard, the proposed GEF budget for these incremental activities will be adjusted in view of the GEFSec comment. Considering the baseline activities of the national government and local governments to support policy and institutional frameworks on low carbon development and technology applications, the project proponent has adjusted the GEF budget to US\$ 1.3 million to support the improvement of the baseline efforts towards transformation of rural towns and villages to zero carbon development.

After PPG Stage

The designed project activities under Component 1 are as proposed in the PIF which are enhancements of the current low carbon development efforts of China in the rural areas to support the improvement of the baseline efforts towards transformation of rural towns and villages to zero carbon development. The total Component budget is US\$ 1.158 million.

PIF: Part I, Sec. B, Comp. 1

CERDoc: Part I, Sec. C (Comp. 1)

<p><u>Comment:</u> 2. For Component 2, please put the targeted number of villages and towns in the outputs. Please also put the locations and or names of the villages and towns if possible. Please also put MW of PV to install or MWh of energy to save in the outputs.</p> <p><u>Response:</u> <u>Before PPG Stage</u> Please refer to Annex A-1 the summary of the tentative list of the low/zero-carbon technology application demos that will be considered for implementation under Component 2.</p> <p><u>After PPG Stage</u> The actual number of provinces that are involved in the project is 8. Four (4) of the originally identified partner provinces are included in the final list of provinces that are involved in the project. These are Hebei, Hubei, Heilongjiang, and Yunnan. The other partner provinces of the project are Beijing, Shanxi, Liaoning, and Ningxia Hui. The demonstration of the application of RE-based energy technologies in the selected demo villages/towns in these provinces are those that are not only applicable in the context of sustainable development of rural towns & villages but also in line energy conservation, energy efficiency and circular economy principles. These will be technologies that can be operated cost-effectively and shall include components that are energy efficient.</p> <p>Please refer to the Supplementary Annex on the Demonstrations for the summary of the low/zero-carbon technology application demos that will be implemented under Component 2 of the project, including the estimated annual energy savings and GHG emission reductions.</p>	<p>PIF: Annex A-1</p> <p>ProDoc: Sec III, Comp. 2</p> <p>ProDoc: Suppl. Annex</p>
<p><u>Comment:</u> 3. Please consider reducing the budget of GEF \$2,007,066 for component 3 to \$1 or \$1.5 million. Reason: the Chinese government has put so much funding for the component. The GEF funding should be used more in investment demonstration (Component 2).</p> <p><u>Response:</u> <u>Before PPG Stage</u> The EZCERTV Project development team (PDT) accedes to the suggestion and have made some adjustments on the Component 3 barrier removal activities. The PDT will focus on including more baseline activities of the national and local governments regarding capacity building on, and providing financial support to, low carbon technology applications, so that such efforts can be geared towards transformation to zero carbon rural development.</p> <p><u>After PPG Stage</u> Per the design of the Component 3 activities, the total component budget is US\$ 1,010,600.</p>	<p>PIF: Part I, Sec. B, Comp. 3</p> <p>ProDoc, Sec. IX</p>
<p>3. Are the indicative expected amounts, sources, and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines, with a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized?</p>	

<p><u>Comment:</u> <i>Please consider raise more co-financing resources. Historically, climate change mitigation projects in China have more than 1:10 co-financing ratio. Please consider this ratio for this project.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> While historically UNDP-GEF CCM projects in China typically are in line with the average co-financing ratio of the overall GEF CCM portfolio, the project proponents are amenable to increasing the co-financing ratio to 1:10. The PDT will focus on including more baseline activities of the national and local governments regarding plans for providing financial support to low carbon technology applications so that such efforts can be geared towards transformation to zero carbon rural development.</p> <p><u>After PPG Stage</u> The previously stated amount of US\$ 89,600,000 co-financing in the GEF-approved PIF is confirmed. The project co-financing ratio is 1:10 (i.e., Total GEF Cost : Total Co-financing).</p>	<p>PIF: Part I, Secs. B & C</p> <p>CERDoc: Part I, Sec. C (<i>Comp. 1</i>)</p>
6. Are the identified core indicators in Table F calculated using the methodology included in the correspondent Guidelines? (GEF/C.54/11/Rev.01)	
<p><u>Comment:</u> <i>Please also provide the amounts of renewable energy generation capacity to be installed (MW), energy to be saved (MWh), and other relevant indicative information. If possible, use an Annex (rather than a footnote) to present the calculation of GHG emission reductions.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> Based on the list of tentative demos that will be implemented under Component 2 of the project, the collective GHG emission reduction by end-of-project that can be attributable to the project is 4.079 million tons CO₂. This total amount will be derived from demonstration of the application energy technologies that contribute to zero carbon town and village development in selected towns and villages in 6 provinces.</p> <p><u>After PPG Stage</u> The project consists of 8 sets of demonstration low/zero carbon energy technology applications in 8 provinces. There will also be villages/towns in each province where replications of the demo low/zero carbon energy technology applications will be implemented. The estimated GHG emission reductions by end-of-project from the demonstration and replication activities is about 4.08 million tons CO₂.</p>	<p>PIF: Annex A-2; and Annex A ? <i>This document</i></p> <p>CERDoc: Annex</p>
Annex A: Is there a preliminary geo-reference to the project's/program's intended location?	

<p><u>Comment:</u> <i>The executing agency has initially selected geo-reference. The GEF PM, the MARA and the OFP of the MOF of China will be visiting the geo-reference in mid-October 2019 in China.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> The geo-references of the confirmed demo villages and towns will be provided during the PPG stage and reflected in the CEO Endorsement Request and Project Document. The initially identified demo towns/counties/villages in the 6 provinces covered by the project are stated in Annex A-1.</p> <p><u>After PPG Stage</u> The identified demo towns/villages are in 8 provinces. The geo-references of the confirmed demo villages in the partner provinces are shown in Annex 2.</p>	<p>PIF: Annex A-1</p> <p>ProDoc: Annex 2</p>
<p>Does the project/program consider potential major risks, including the consequences of climate change, that might prevent the project objectives from being achieved or may be resulting from project/program implementation, and propose measures that address these risks to be further developed during the project design?</p>	
<p><u>Comment:</u> <i>Please consider the risk of climate change on this project and describe any measures to mitigate this risk. Please check the new requirements of the GEF SEC on addressing climate risk for GEF projects before working on this issue.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> The risk of climate change on this project is already stated in the EZCERTV PIF (Part II, Sec. 5, p. 25). The stated risk is: RE-based energy generation (power and non-power purposes) and EE system installations can be seriously affected by adverse climate-related events. Both preventive and alleviative mitigation measures are also stated in the PIF.</p> <p><u>After PPG Stage</u> This risk is verified and confirmed during the project design. The same preventive and alleviative mitigation measures have been recommended.</p>	<p>PIF: Part II, Sec. 5, p. 25</p> <p>ProDoc: Annex 6</p>
<p>Is the PIF/PFD recommended for technical clearance? Is the PPG (if requested) being recommended for clearance?</p>	
<p><u>Comment:</u> <i>Please address the above comments.</i></p> <p><u>Response:</u> The project proponents have addressed the comments and are looking forward to the GEF CEO Approval of the proposed PIF.</p>	

<p><u>Comment:</u> <i>Please double check and make sure that the UNDP will not perform any executing functions in this project. This is to facilitate the approval of the project.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> The project will be implemented by the designated implementing partner, which is the Ministry of Agriculture and Rural Affairs (MARA), under the UNDP's national implementation modality (NIM). In this case, the Government of China as represented by the MARA is fully responsible for the effective use of the project resources and the delivery of the agreed tangible outputs of the project and bring about the expected project outcomes. As the GEF Agency for this project, the UNDP will not be executing any project activity but will be providing administrative and logistical services, apart from the required GEF Agency project management services, during project implementation if and only if these are specifically requested by the MARA and such request is endorsed by the country's GEF Operational Focal Point.</p> <p><u>After PPG Stage</u> The designed project implementation arrangement is as stated and planned during the PIF stage. The UNDP as GEF Agency will not be executing any project activity but will just be providing project oversight services.</p>	<p>PIF: Part II, Sec. 1a.3, p. 17</p> <p>ProDoc: Sec VII</p>
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Annex A: Zero Carbon Energy Technology Application Demonstrations

Exhibit A.1: Tentative List of Zero Carbon Energy Generation and Supply Scheme Demonstrations

Province	Demonstration	RE Resources
Hebei	Zero carbon town (2 towns); Installation of RE-based power generation and distribution system to serve the current electricity demand of each town + utilization of biomass for biogas production and utilization to meet the energy needs of each village for cooking and heating.	Biomass & solar
Hebei	Zero carbon town (1 town); Installation of RE-based power generation and distribution system to serve the electricity demand of the town (all electric applications) for electric appliances, cooking, and heating.	Biomass & solar
Hubei	Zero carbon village (1 village); Installation of RE-based power generation and distribution system to serve the electricity demand of the village (all electric applications) for electric appliances, cooking, and heating.	Biomass, solar, hydro
Gansu	Zero carbon village (1 village); Installation of RE-based power generation and distribution system to serve the electricity demand of the village (all electric applications) for electric appliances, cooking, and heating.	Biomass, solar, hydro
Heilongjiang	Zero carbon village (55 villages); Installation of RE-based power generation and distribution system to serve the current electricity demand of each village + utilization of biomass for biogas production and utilization to meet the energy needs of each village for cooking and heating.	Biomass & solar
Yunnan	Zero carbon village (1 village); Installation of RE-based power generation and distribution system to serve the electricity demand of the village (all electric applications) for electric appliances, cooking, and heating.	Biomass, solar, hydro

Anhui	Zero carbon village (60 villages); Installation of RE-based power generation and distribution system to serve the current electricity demand of each village + utilization of biomass for biogas production and utilization to meet the energy needs of each village for cooking and heating.	Biomass & solar
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Note: All RE-based energy technologies that will be applied in the demos will be those that are not only applicable in the context of sustainable development of rural towns & villages but also in line with energy conservation, energy efficiency and circular economy principles. These will be technologies that can be operated cost-effectively and shall include components that are energy efficient.

Exhibit A-2: Estimated GHG Emission Reductions from the Planned Demos

A. Data and Assumptions

In 2017:

1 rural town is comprised on average 20 administrative villages.

1 village is comprised on average 875 households.

1 household is comprised of 3 persons.

Total energy consumption in rural areas = 590 million tce (54.2% residential sector; 45.8% other sectors)

Average rural energy consumption distribution in China:

Energy Source	Per capita Energy Consumption, tce		
	Residential	Non-residential	Total
Coal	0.33	0.28	0.61
Electricity	0.07	0.06	0.13
Fuelwood	0.10	0.08	0.18
LPG	0.03	0.03	0.06
Natural Gas	0.02	0.01	0.03
Biogas	0.01	0.00	0.01
TOTAL	0.55	0.47	1.02

Note: The planned provinces where demos will be implemented do not have piped natural gas supply.

Standard Coal Equivalents (tce)

Solid: Raw coal 0.7143 kgce/kg; Kerosene 1.4714 kgce/kg; Other washed coal 0.2857 kgce/kg;

Briquette 0.7143 kgce/kg; Coke 0.9714 kgce/kg

Liquid: Liquefied petroleum gas 1.7143 kgce/kg; Diesel 1.4571 kgce/kg; Gasoline 1.4714 kgce/kg.

Gas: Natural gas 1.1 kgce/cu?m; Coke oven gas 0.5714 kgce/m3; Other coal gas 0.1786 kgce/m3

Others: Electricity 0.1229 kgce/kWh; Heat 0.03412 kgce/MJ

GHG Emission Factors

Energy Source	Emission Factor	Remark
Coal	2.657	tCO2/ton, sub-bituminous coal, 28.22 MJ/kg heating value
Grid Electricity	1.067	tCO2/MWh, pulverized coal fired thermal power plant, sub-bituminous coal
Wood	1.462	tCO2/ton, firewood, 14.82 MJ/kg heating value, non-sustainable
LPG	2.969	tCO2/ton, 47.31 MJ/kg heating value
Natural Gas	1.800	tCO2/'000 m3, 34.54 MJ/m3 heating value

RE Technology Applications in Demonstrations

Province	RE Resource Application %Distribution			RE Resource Power Application %Distribution			RE Resource Heat Application %Distribution	
	Biomass	Solar	Hydro	Biomass	Solar	Hydro	Biomass	Solar
Hebei	95	5		95	5		95	5
Hubei	80	10	10	80	10	10		
Gansu	80	10	10	80	10	10		
Heilongjiang	90	10		90	10		90	10
Yunnan	80	10	10	80	10	10		
Anhui	90	10		90	10		90	10

B. Estimated RE-based Energy Generation System Capacity and GHG Emission Reduction

Province	RE-based Electricity Generation, MW				RE-based Heat Generation, MW			Estimated GHG Emission Reduction, tCO ₂ *
	Biomass	Solar	Hydro	Total	Biomass	Solar	Total	
Hebei	3.4	0.7	-	4.1	22.5	1.2	23.6	445,492.0
Hebei	46.9	9.5	-	56.4			-	1,568,402.9
Hubei	3.3	1.6	1.6	6.6			-	132,571.7
Gansu	3.3	1.6	1.6	6.6			-	132,571.7
Heilongjiang	5.9	2.5	-	8.4	36.3	4.0	40.3	797,646.3
Yunnan	3.3	1.6	1.1	6.0			-	132,571.7
Anhui	6.4	2.7	-	9.1	39.6	4.4	44.0	870,159.6
TOTAL	72.6	20.3	4.3	97.0	98.4	9.6	108.0	4,079,415.7

*GHG emission reductions are cumulative by end-of-project (Year 5). Accounting starts in Year 2.

Exhibit B-2: Responses to GEFSec Comments - 31 October & 4 November 2019

Comment & Response	Reference
3. Are the indicative expected amounts, sources, and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines, with a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized?	

<p><u>Comment:</u> <i>Yes, the co-financing amount is raised but the ratio of co-financing is still less than 1:10. In the PPG stage, please identify more co-financing and make the ratio no less than 1:10.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> Correction has been made on the total co-financing amount, which is at US\$ 89,600,000, to come up with a co-financing ratio of 1:10 (i.e., Total GEF Cost : Total Co-financing). Nonetheless, the project development team will not only work on confirming the estimated total co-financing amount but also identify more potential co-financing during the PPG stage by including more baseline activities of the national and local governments regarding plans for providing financial support to low carbon technology applications so that such efforts can be geared towards transformation to zero carbon rural development.</p> <p><u>After PPG Stage</u> The previously stated amount of US\$ 89,600,000 co-financing for the project is confirmed. This comes from the implementing partner (MARA - Ministry of Agriculture and Rural Affairs) and the provincial agriculture & rural affairs departments (DARAs) in the provinces that are involved in the project. There are also co-financing from private sector entities that are involved in the demonstration activities of the project.</p>	<p>PIF: Part I, Secs. A, B & C</p> <p>CERDoc: Part I, Secs. A, B & C</p>
<p>Additional recommendations to be considered by Agency at the time of CEO endorsement/approval:</p>	
<p><u>Comment:</u> <i>1. By the time of CEO Endorsement, the GEF Implementing Agency (UNDP) needs to present (i) a detailed explanation of the mechanism through which the Executing Entities (the Ministry of Agriculture and Rural Affairs and other local organizations) will select the grant proposals and disburse the funds; and (ii) how GEF Implementing Agency (the UNDP) will ensure that the Minimum Fiduciary Standards Requirements (to be approved in December 2019 by Council) are met by each of the Executing Entities at all levels of the project implementation.</i></p> <p><u>Response:</u> <u>Before PPG Stage</u> The project proponent accedes to complying with the specific instructions that must be followed during the project design and development stage (PPG exercise) regarding the financial management requirements to be complied with by the project's executing entities and how UNDP will ensure that the <i>Minimum Fiduciary Standards Requirements</i> are met by these entities at all stages of project implementation.</p> <p><u>After PPG Stage</u> Based on the designed activities to deliver the expected output under Component 3, the estimated Component 3 budget is US\$ 1,010,600.</p>	<p>PIF: Part II, Sec. 1a.3, last para, p. 17</p> <p>CERDoc: Part 1, Sec. B</p>

<p><u>Comment:</u> 2. As the agency knows, the implementation and execution roles on GEF projects are meant to be separate per policy and guideline. The GEFSEC will analyze any requests for dual role playing by an agency at the time of CEO endorsement and only approve those cases that it deems warranted on an 'exceptional' basis. We strongly encourage the agency to look at third party options as a preferred way forward. We also strongly encourage the agency to discuss any and all options for execution that do not include the government with the GEFSEC early in the PPG phase. The technical clearance of this PIF in no way endorses any alternative execution arrangement.</p> <p><u>Response:</u> <u>Before PPG Stage</u> Per the agreed implementation modality, the Ministry of Agriculture and Rural Affairs (MARA) is the main implementing party for this project. In this case, the Government of China as represented by the MARA is fully responsible for the effective use of the project resources and the delivery of the agreed tangible outputs of the project and bring about the expected project outcomes. As the GEF Agency for this project, the UNDP will not be executing any project activity apart from the required GEF Agency project management services.</p> <p>- <u>After PPG Stage</u> The designed project implementation arrangement is as stated and planned during the PIF stage, with MARA as the designated implementing partner. The UNDP as GEF Agency will not be executing any project activity nor involved in project management but will just be providing project oversight services.</p>	<p>PIF: Part II, Sec 1a.3, last para, p. 17</p> <p>ProDoc: Sec. VII</p>
Is the PIF/PFD recommended for technical clearance? Is the PPG (if requested) being recommended for clearance?	
<p><u>Comment:</u> Not at this time.</p> <p><u>Response:</u> The project proponent has accepted the recommendations and have addressed the additional comments. They are looking forward to the GEF CEO Approval of the proposed PIF.</p>	

Exhibit B-3: Responses to Germany Council Member Comments (8 January 2020)

Comment	Response
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Comment	Response
<p>Given that no information regarding the exact regions/cities where this project will be implemented was provided, Germany recommends that this information is added to the proposal. If this is only to be decided throughout the process of implementation, the method should be outlined.</p>	<p>During the project design stage, the project development team (PDT) conducted missions to prospective villages where the potential low/zero carbon energy technology applications will be carried out as demonstrations. The selection of the potential project sites was made based on, among others, the current rural development activities that are carried out in various provinces. In particular, activities that are either supported or being facilitated by the local (provincial, town/municipality) government and by the provincial agriculture and rural affairs departments (DARAs). The exact locations of the project sites (demonstration villages) are already known and the preliminary designs of the planned low/zero carbon energy technology applications that will be showcased in each of these demo village have been done. Also, among the criteria for the selection of demo village is the presence of private sector low/zero carbon energy development projects within or the vicinity of the potential village.</p> <p>Detailed design of the demos will be carried out during the implementation of the Component 2 activities, including the identification, preliminary and detailed design of the replications of the demos.</p>
<p>Given the importance of the technologies employed in project implementation, Germany suggests to incorporate them into the main text of chapter 1a.3, along with additional details about their application.</p>	<p>The low/zero carbon energy technologies that will be promoted and whose application in rural settings will be demonstrated under the project are those that are considered practical, cost-effective, and applicable in supporting the sustainable development of rural towns and villages in China. The identified demonstrations are described in the Supplemental Annex on the Description of Demonstrations.</p>
<p>Given the tendency of rural towns to be characterized by financially weak populations, population shrinkage, and remoteness of location, Germany suggests to address this potential barrier to sustainability in chapter 1a.7. The establishment of investment and financing mechanisms to support the commercial viability and operation of zero-carbon energy in rural towns is an intended output. Commercial viability of energy systems is critical to sustainability.</p>	<p>The project design includes an activity on the design and implementation of a program to assist rural municipalities and towns in sourcing funding for socio-economic development initiatives from available alternative sources of funds.</p> <p>Among the expected outputs of the project (under Component 3) is an established and operational investment and financing mechanisms for supporting the commercial viability and operation of zero-carbon towns and villages and the development of rural renewable energy industries. To deliver this output, the project will carry out: (a) evaluation of the existing financing mechanisms and incentives, and their adaptation to zero-carbon rural development in China; (b) promotion of green finance and implementation of business practices to support the development of zero-carbon villages and towns; and (c) design and conduction of a promotional, assistance, and capacity building program to enhance the involvement of private sector and financial practitioners, as well as national and local governments, and collectively finance and build community-based RE/EE facilities. To support these activities, the project also include policy development work on the revision of the laws related to Renewable Energy, Energy Efficiency and Energy Conservation to include incentives and financing mechanisms.</p>

Comment	Response
Germany suggests the use of baseline studies of current energy landscape as an activity in component 2 before designing and planning the selected RE and/or EE technologies.	Agree with this suggestion. Part of the activities carried out by members of the PDT who conducted missions in the various provinces is the identification of the energy consumption, evaluation of the business-as-usual scenario in the identified prospective demo villages, including the baseline activities of the various actors (e.g., village residents and leaders, private sector entities within and in the vicinity of the village). Among the baseline activities that were identified are sustainable rural development projects funded by MARA in the province, as well as by the private sector, to which the planned demos can build on.
Germany suggests cooperating with the ?Sino-German Urbanization Partnership? commissioned by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), which aims to contribute to climate-friendly, integrated, and sustainable urbanization. Furthermore, cooperation with the ?Sino-German Center for Sustainable Development? and the GIZ projects ?Sino-German Energy Partnership? and ?Sino-German Cooperation on Climate Policies? could be of relevance.	Thank you for the suggestion. While the project focuses on low/zero carbon development of rural towns and villages in China, the PDT agrees that the project can make use of, or learn about, the principles, techniques and measures as applied to sustainable urban development. The project team will definitely consult and explore potential collaboration and synergy with the stated Sino-German cooperation and partnership programs during the project implementation particularly in the project provinces where such programs are active.
Germany recommends using only one unit (most common kWh) for describing energy units.	The project will make use of one energy unit, which is the one that is commonly used in China ? tons of coal equivalent (tce). Per the experience in other energy projects, the use of kWh as common energy unit is rather confusing to some project stakeholders who are not able to differentiate kWh _e from kWh _{th} .

Exhibit B-4: Responses to Comments of the Norway-Denmark Constituency (17 January 2020)

Comment	Response
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Comment	Response
<p>There is no description on why these provinces have been picked (Gansu, Yunnan, Hubei, Anhui, Hebei, or Heilongjiang). It is notable that Heilongjiang and Anhui have many more towns and villages than the rest. It could be beneficial to include some in the biggest agricultural and coal consuming provinces like Henan and Shandong.</p>	<p>The initial provinces were selected by the designated implementing partner based on various factors, among which are: (a) availability of indigenous RE resources in the rural towns/villages; (b) current significant consumption of fossil fuels (particularly coal); (c) availability of ongoing sustainable rural development activities (particularly those supported by MARA); (d) selection of provinces in different climate regions of the country; and (e) availability of private sector energy-related or sustainable rural development initiatives.</p> <p>The selected project sites are also in provinces that have vast agricultural areas and activities, and also consume coal as well as other fossil fuels like natural gas and LPG. The same criterion will be used in the identification and selection of the demo replication sites in these selected provinces.</p>
<p>The project ?will be designed to incorporate features associated with the concepts and techniques of low carbon development?. This seems vague. It could be beneficial to have a more concrete definition of low/zero carbon from the onset to avoid confusion or at least describe how these features will be decided and implemented.</p>	<p>The PIF provided a description of low/zero carbon development as based on the improved development and utilization of renewable energy resources in rural areas, adopting renewable energy technologies and integrated energy management and energy efficiency technologies/techniques to meet the increasing energy demand in rural areas, and accelerate the rural energy transformation. Low/zero carbon development will contribute to improved "ecological livability" in China's rural revitalization strategy, promotion of circular economy, and contribute to the achievement of China's National Determined Contributions (NDCs) targets under the Paris Agreement. This will be emphasized in Sec. II (Development Challenge) of the EZCERTV Project Document.</p>
<p>The national steering committee suggested should ensure sufficient high-level ownership for efficient implementation.</p>	<p>The project steering committee (project board) is proposed to be chaired by MARA (as implementing partner). Part of this committee/board are the project development partners, which include key GOC ministries such as Finance, Environment and Ecology, and the NDRC; provincial governments and the UNDP.</p>

ANNEX C: Status of Utilization of Project Preparation Grant (PPG).
(Provide detailed funding amount of the PPG activities financing status
in the table below:

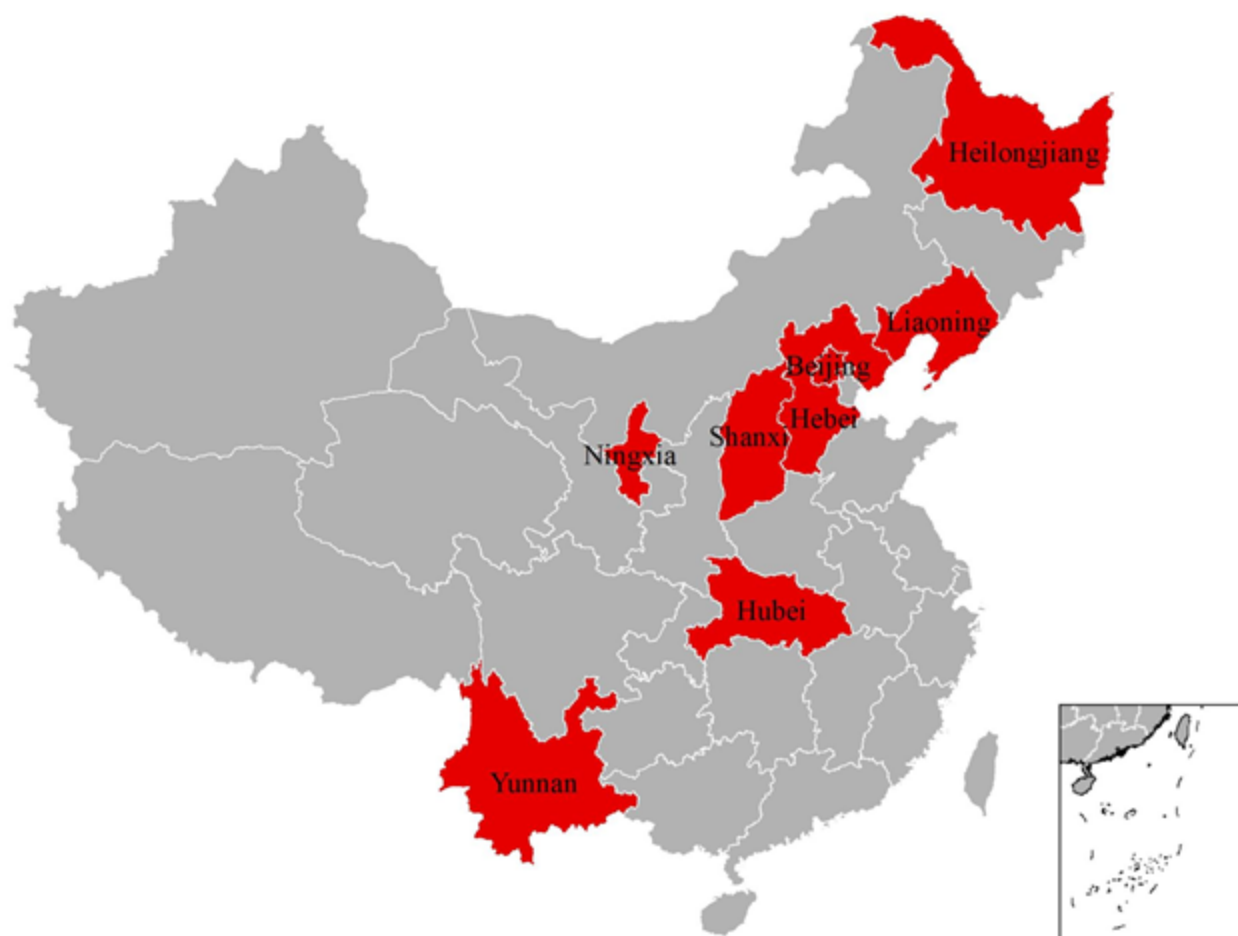
PPG Grant Approved at PIF: US\$ 200,000			
<i>Project Preparation Activities</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount (US\$)</i>	<i>Amount Spent To date (US\$)</i>	<i>Amount Committed (US\$)</i>
Design and development of the UNDP-GEF project: Enabling Zero Carbon Energy in Rural Towns and Villages in China (EZCERTV)	200,000	134,167	65,833
Total	200,000	134,167	65,833

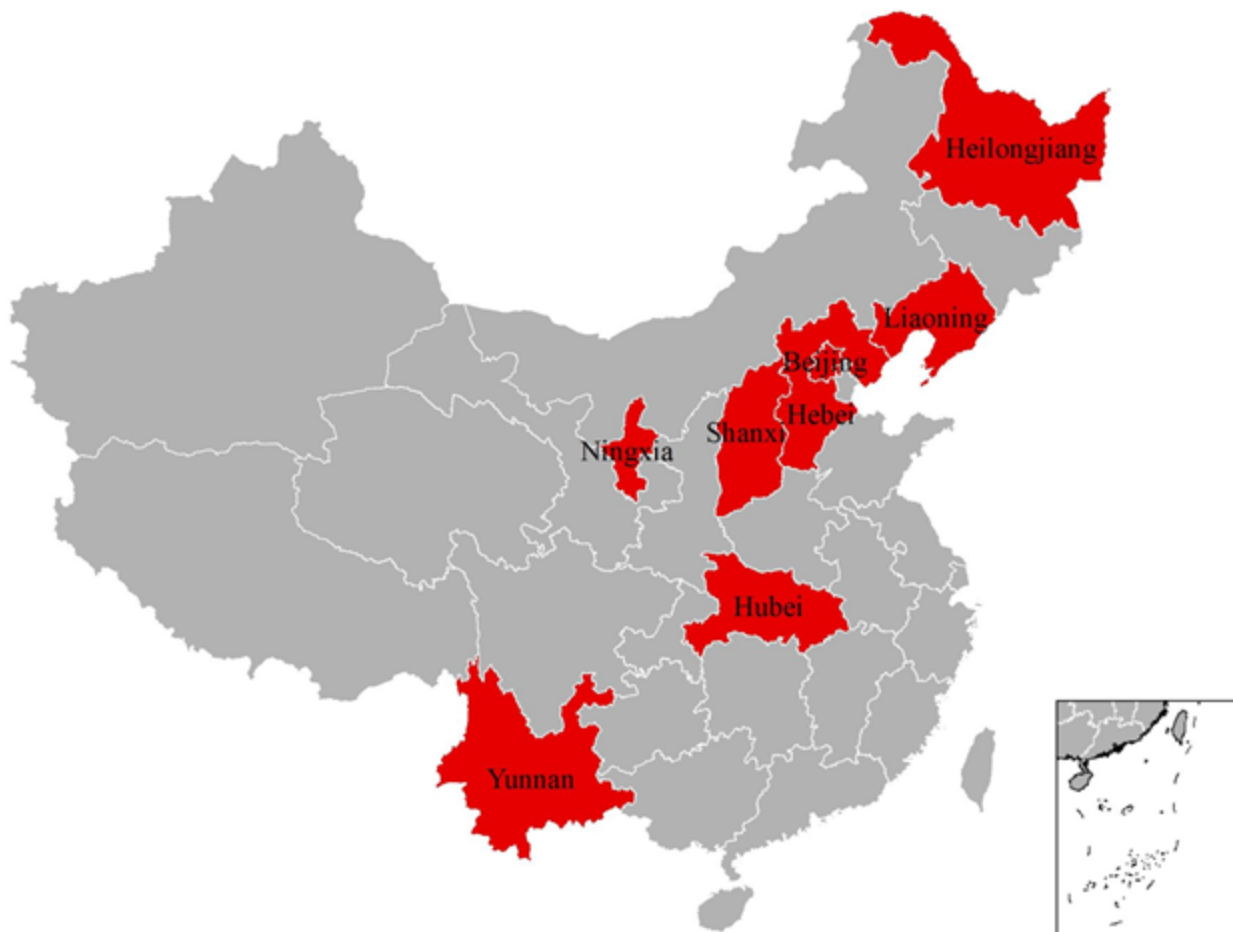
ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Annex E: Project Map(s) and Coordinates

Figure 1. Map of the Project Partner Provinces





ANNEX E: Project Budget Table

Please attach a project budget table.

Atlas Activity (GEF Component)	Sub-Component	ATLAS Implementing Agent (Responsible Party/[1], IP, or UNDP)	Atlas Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Account Description	Amount Year 1 (US D)	Amount Year 2 (US D)	Amount Year 3 (US D)	Amount Year 4 (US D)	Amount Year 5 (US D)	Total (US D)
COMPONENT 1: Energy Policy & Regulatory Framework Strength	Outcome 1: Effective enforcement of policies and institutions	MARA	62000	GEF	71200	International Consultants	31,500	31,500	24,500	35,000	24,500	147,000
					71300	Local consultants	35,000	29,750	40,250	33,250	36,750	175,000
					71600	Travel	10,000	10,000	10,000	10,000	10,000	50,000

Atlas Activity (GEF Component)	Sub-Component	ATLAS Implementing Agent (Responsible Party/[1], IP, or UNDP)	Atlas Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Account Description	Amount Year 1 (US D)	Amount Year 2 (US D)	Amount Year 3 (US D)	Amount Year 4 (US D)	Amount Year 5 (US D)	Total (US D)
ening	onal frameworks towards the development of zero carbon towns and villages in rural China				72100	Contractual Services - Companies	150,000	215,000	65,000	75,000	45,000	550,000
					74500	Miscellaneous	200	200	200	200	200	1,000
					75700	Training, workshops	30,000	40,000	20,000	30,000	20,000	140,000
					Total Outcome 1		256,700	326,450	159,950	183,450	136,450	1,063,000
Component 2: Integrated Renewable Energy and Energy Efficiency Technologies Applications for Zero Carbon Town and Village Development	Outcome 2: Low/zero carbon technology applications are widely implemented in rural towns and villages in rural areas of China.	MARA	62000	GEF	71200	International Consultants	41,000	52,500	53,500	42,000	42,000	231,000
					71300	Local Consultants	7,000	22,750	19,250	24,500	21,000	94,500
					71600	Travel	6,000	6,000	6,000	6,000	6,000	30,000
					72100	Contractual Services - company	151,000	217,400	585,050	858,800	861,600	2,673,850
					72200	Equipment and Furniture	-	2,100,000	900,000	87,500	-	3,087,500
					72800	Information Tech. Equipment	30,000	-	-	-	-	30,000
					74500	Miscellaneous Expenses	1,400	1,300	1,300	1,300	1,317	6,617

Atlas Activity (GEF Component)	Sub-Component	ATLAS Implementing Agent (Responsible Party/[1], IP, or UNDP)	Atlas Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Account Description	Amount Year 1 (US D)	Amount Year 2 (US D)	Amount Year 3 (US D)	Amount Year 4 (US D)	Amount Year 5 (US D)	Total (US D)
					75700	Training , Workshops and Conferences	-	30,000	30,000	-	-	60,000
	Total Outcome 2						236,400	2,429,950	1,595,100	1,020,100	931,917	6,213,467
Component 3: Facilitating Rural Zero Carbon Development and Lifestyle Popularization and Knowledge Dissemination	Outcome 3: Enhanced and strengt hened public awareness and knowledge about low carbon technology energy applica tions in support of zero carbon town and village develo pment in rural China.	MARA	62000	GEF	71200	Internati onal Consult ants	10,500	32,900	28,000	23,800	16,800	112,000
					71300	Local Consult ants	24,000	19,750	19,750	18,000	21,500	103,000
					71600	Travel	10,000	10,000	10,000	10,000	10,000	50,000
					72100	Contract ual Services - compan y	66,000	133,000	125,000	66,000	40,000	430,000
					74500	Miscella neous Expense s	1,100	1,100	1,100	1,100	1,200	5,600
					75700	Training , Worksh ops and Confere nces	-	70,000	90,000	80,000	70,000	310,000
	Total Outcome 3						111,600	266,750	273,850	198,900	159,500	1,010,600
M & E	M&E	MARA	62000	GEF	71200	Internati onal consulta nts	-	-	35,000	-	35,000	70,000
					71300	Local consulta nts	17,000	17,000	32,000	17,000	32,000	115,000

Atlas Activity (GEF Component)	Sub-Component	ATLAS Implementing Agent (Responsible Party/[1], IP, or UNDP)	Atlas Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Account Description	Amount Year 1 (US D)	Amount Year 2 (US D)	Amount Year 3 (US D)	Amount Year 4 (US D)	Amount Year 5 (US D)	Total (US D)
					72100	Contractual Services - company	5,000	5,000	5,000	5,000	5,000	25,000
					75700	Training , workshops	23,000	3,000	3,000	3,000	3,000	35,000
Total M&E							45,000	25,000	75,000	25,000	75,000	245,000
PMC	PMC	MARA	62000	GEF	71800	Contractual services ? Implementing Partner	71,000	71,000	71,000	71,000	71,000	355,000
					74100	Professional services	5,000	5,000	5,000	5,000	5,000	25,000
					71600	Travel	4,000	4,000	4,000	4,000	-	16,000
					74500	Miscellaneous Expenses		1,000	1,000	1,353	1,000	4,353
Total PMC							80,000	81,000	81,000	81,353	77,000	400,353
						PROJECT TOTAL	729,700	3,129,150	2,184,900	1,508,803	1,379,867	8,932,420

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).