

China Energy Transition Towards Carbon Neutrality Project

Part I: Project Information

GEF ID
10770

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT No
NGI No

Project Title
China Energy Transition Towards Carbon Neutrality Project

Countries
China

Agency(ies)
World Bank

Other Executing Partner(s)
National Energy Administration

Executing Partner Type
Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Mitigation, Financing, Renewable Energy, Influencing models, Demonstrate innovative approaches, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Stakeholders, Private Sector, Financial intermediaries and market facilitators, SMEs, Type of Engagement, Consultation, Participation, Academia, Civil Society, Non-Governmental Organization, Gender Equality, Sex-disaggregated indicators, Gender Mainstreaming, Access to benefits and services, Gender results areas, Capacity, Knowledge and Research, Knowledge Generation, Workshop, Training, Innovation, Capacity Development, Knowledge Exchange, North-South, Conference, South-South, Field Visit, Peer-to-Peer

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 0

Duration

60 In Months

Agency Fee(\$)

1,568,807.00

Submission Date

3/19/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-1	GET	17,431,193.00	352,000,000.00
Total Project Cost (\$)		17,431,193.00	352,000,000.00

B. Indicative Project description summary

Project Objective

The project development objective is to accelerate energy transition towards carbon neutrality in the power sector through supporting development of policies at national level and piloting implementations in selected province(s).

Project Outcomes

Component 1: National level policy and technical support.

Outcomes:

- Roadmaps and work plans to achieve 2030 carbon emission peaking and 2060 carbon neutrality in China's power sector developed
- Improved legal and policy environments to achieve higher RE penetration in power sector and accelerating phasing out coal power
- Policy environment established to expand the application of emerging technologies

Outputs:

1. The guideline of power planning methodology for dominant role of renewable energy in power systems
2. Provide technical support to the finalization of long term power development planning in 2030/2035.
3. Roadmap to achieve 2030 carbon emission peaking and 2060 carbon neutrality in China's power sector
4. Support to develop/improve policies to increase penetration of zero carbon generation: RE quota, green certificates, enhanced inter-provincial power exchange to increase RE delivery, and RE participation in power markets
5. Support to studies and policies to accelerate phasing out coal power generation
6. Technical support platform to promote application of zero carbon technologies (green hydrogen, battery storage with RE etc.)

Component 2. Provincial/city level energy transition pilots:

Outcome: Energy transition is accelerated in selected provinces towards zero carbon emissions in the power sector, and replication in other provinces

Outputs:

Demonstration cases of accelerated energy transition in selected provinces, including both pathways and supportive solutions for energy transition in power sector (e.g. application of zero carbon energy technologies). The pilots will be a key solution to achieve the zero carbon emission in Shanxi and other selected provinces/cities.

1. Pilot coal power repurposing in selected province(s) like Shanxi.

2. Pilot green hydrogen production to promote large scale RE integration in selected province(s), e.g. western China, Guangxi
3. Pilot large scale development of battery storage with RE in selected province(s), e.g. Inner Mongolia, Jiangsu and/or Zhejiang
4. Integrated solutions (policies, technologies, and consumer participation) to pilot earlier carbon emission peaking and zero carbon emission in selected province(s) or cities, e.g. Qinghai

Component 3. Capacity building and project management:

Outcome: Improved capacity of policy makers and institutions for implementation of the energy revolution program

Outputs:

1. Monitoring progress of achieving key project indicators
2. Trainings, workshops and study tours for the relevant institutions and organizations
3. Knowledge exchange and dissemination
4. Project management

Project Component	Financing Type	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
1. National level technical support	Technical Assistance	GET	2,500,000.00	1,000,000.00
2. Provincial/city level energy transition pilots.	Investment	GET	12,500,000.00	340,750,000.00
3. Capacity building and project management.	Technical Assistance	GET	1,923,193.00	
		Sub Total (\$)	16,923,193.00	341,750,000.00
Project Management Cost (PMC)				
		GET	508,000.00	10,250,000.00
		Sub Total(\$)	508,000.00	10,250,000.00
Total Project Cost(\$)			17,431,193.00	352,000,000.00

C. Indicative 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	National and provincial governments	In-kind	Recurrent expenditures	2,000,000.00
GEF Agency	World Bank	Loans	Investment mobilized	350,000,000.00
Total Project Cost(\$)				352,000,000.00

Describe how any "Investment Mobilized" was identified

(1) The World Bank is preparing a two-phase IBRD loan of US\$ 650 million project to support energy transition in Shanxi province, and approved an IBRD loan of US\$ 300 million in 2019 to promote the renewable and battery storage application in China. Based on the discussion in the concept review meeting, the IBRD loan for the Shanxi Energy Transition and Green Growth Development Policy Operation Phase 1 (US\$ 350 million) has been identified as the co-financing of the proposed GEF project. (2) Additional co-financing will be verified after the pilot investment projects under Component 2 are identified and confirmed during the project preparation; it is anticipated that their investment costs, including private sector investment, would also be included as co-financing.

D. Indicative 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(\$)	Total(\$)
World Bank	GET	China	Climate Change	CC STAR Allocation	17,431,193	1,568,807	19,000,000.00
Total GEF Resources(\$)					17,431,193.00	1,568,807.00	19,000,000.00

E. Project Preparation Grant (PPG)

PPG Required **false**

PPG Amount (\$)				PPG Agency Fee (\$)			
Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
Total Project Costs(\$)					0.00	0.00	0.00

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)	80000000	0	0	0
Expected metric tons of CO ₂ e (indirect)	0	0	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)	80,000,000			
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting	2023			
Duration of accounting	20			

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)				

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)
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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	1,300,000			
Male	2,800,000			
Total	4100000	0	0	0

Part II. Project Justification

1b. Project Map and Coordinates

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



2. Stakeholders

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

Indigenous Peoples and Local Communities

Civil Society Organizations No

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

1. The energy transition in China is mainly driven by domestic stakeholders, with international support. The key stakeholders include both the central and provincial governments, other key domestic stakeholders including both state-owned enterprises (SOEs) and private sector, with international cooperation in the forms of bilateral and foreign or joint venture investors.
2. At the central government level, NDRC and NEA are the key agencies – NDRC is in charge of the overall economic reform and opening policies, preparing and implementing five-year plans, and setting prices for all regulated goods, while NEA is responsible for developing energy policies, regulations and plans, enforcing the energy sector reform and overseeing the energy sector operations. Other central government agencies are responsible for administration of different sub-sectors, including industrial EE, building EE, transport etc. Central SOEs are the investors on behalf of the central government in promoting RE and EE as well as coal, oil and gas. They play an important role in implementing energy transition in line with central government directions. Some of them (such as the State Grid Company, State Power Investment Company) have announced their plans for accelerating carbon emission peaking by 2030 and carbon neutrality by 2060.
3. At the provincial government level, provincial DRC and Energy Bureaus are the key agencies to issue provincial level energy policies, prepare and implement five-year plans at provincial level, and approve investment projects when required. The provincial SOEs are the key investors on behalf of the provincial government in promoting energy transition in the province.
4. During the project identification, consultation with multiple types of stakeholders have been made to hear from their opinions and suggestions. These stakeholders include government agencies (e.g. NEA, NDRC), enterprises (both private and state-owned) covering generation companies (e.g. State Power Investment Corporation, China Huaneng Group, China Xiexin Group), grid companies (State Grid, China Southern Grid, Inner Mongolia Grid), manufactures (e.g. PV, wind turbine, and battery), service providers, thinktanks (mainly research institutes and universities), industrial associations (renewable, energy storage), and international agencies (UK embassy, AFD, KfW). different seminars were held by NEA and the World Bank to consult with these stakeholders in collecting project ideas and finalizing the project design. Renewable energy developers especially many of the PV manufacturers and project developers come from private sectors. Intensive discussion with Shanxi Provincial Government, including its top leader and different government agencies, has been conducted to define the scope of Shanxi DPO, especially the policy actions to accelerate its economy transition, energy transition and measures to mitigate the social and environmental impacts of the transition.
5. During project preparation, further consultation will be made to targeted provincial governments and potential investors of the pilot projects, organized by NEA. Expanded consultation will be arranged to cover research institutes, design institutes, manufactures, industrial associations, and international agencies, in order to evaluate the impacts of the project activities. During the project implementation, consultation will be arranged with stakeholders who participate in the pilots or affected by the project. Survey will be considered to provide quantitative results, as part of the project monitoring.

The concerned institutions that are involved in the project implementation are illustrated in table below.

Project component	Leading Institutions	Concerned Institutions
Overall Project Implementation	NEA	Ministry of Finance (MOF)
Component 1: national level policy and technical support	NEA	MOF, National Development and Reform Commission (NDRC), Ministry of Ecology and Environment (MOEE), and other central government agencies; industrial associations (battery storage, hydrogen, renewable etc.); international and local research institutes and universities
Component 2: provincial/city level energy transition pilots	NEA, provincial governments of the selected provinces (Shanxi etc.), investors of the selected pilot projects	Research institutes, design institutes, international agencies, international consultants
Component 3: capacity building and project management	PMO/NEA	International and local consultants, concerned central and provincial government agencies, thinktanks, investors of the selected pilot projects, stakeholders

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

A gender gap exists globally between men and women in terms of the longevity of their careers in science and technology fields. Retention of women in Science, Technology, Engineering, and Mathematics (STEM) in China (of which the RE workforce is a part) is a problem too. A recent published report, *Renewable Energy: A Gender Perspective*, by the International Renewable Energy Agency (IRENA) in 2019 indicated that the average share of women in renewable energy jobs among survey respondents was 32 percent, ranging from a low of 28 percent in STEM related jobs to a moderate 35 percent in non-STEM technical jobs and a high of 45 percent in administrative jobs.

Given the focus of the project to (i) build the vision, policy, targets, mid-to-long-term planning to accelerate energy transition in the power sector at national level, (ii) create the enabling environment to achieve carbon emission peaking and neutrality in the energy sector, and (iii) provide tailor-made support to implementation at the provincial level, the most logical gender entry point for the project is to address the barriers to and create opportunities for female employment in the RE sector. The proposed project will contribute to addressing the gender gap in the RE sector in China in three ways: (a) introducing a requirement to increase female engagement/employment in those pilot projects financed directly under the proposed project; (b) generating socio-economic benefits for women by identifying and applying measures to increase female employment in the RE sector; and (c) improving policy making by providing relevant gender information (e.g., on women's participation in different aspects of the RE sector) to the line government agencies. A survey is planned in the project preparation and implementation stages to collect information about women's employment in RE related sectors. Information collected in the project will be provided to the concerned government agencies to support their efforts to reduce the gender gap at the national level. A project indicator is added about new added employees in both solar PV and wind power industries in China. The indicator will be monitored based on survey at the project preparation, mid-term review and project closing.

A project indicator is added about new added employees in both solar PV and wind power industries in China. The sex-disaggregated indicator will be monitored based on survey at the project preparation, mid-term review and project closing.

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

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

improving women's participation and decision-making; and/or

generating socio-economic benefits or services for women. Yes

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

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

Private sector has been consulted and will be consulted continuously during the project preparation and implementation. The private sector is a key stakeholder of the proposed project, including those RE developers, manufacturers, service providers, and some coal mining companies. It is expected that private companies would participate in the provincial and city level energy transition pilots directly and provide co-financing to the project. Private companies will also be affected by the national policies in energy transition. See description in Stakeholder section as well.

5. 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

High or Substantial

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Implementation of TA activities under Component 1 and 2 will not cause any direct adverse environmental impacts but will involve significant stakeholder engagement and public consultation for inclusive planning and potentially have downstream impacts during the implementation of the products/outcomes of TA (such as impacts, risks and hazards from construction, installation and operation of battery storage, wind farms, solar PV stations, and electric power transmission facilities, including general construction nuisance, habitat alteration or disruption, electric and magnetic fields exposure, hazardous materials disposal, fire and explosion risks, occupational health and safety, etc.). Downstream environmental issues and implications would need to be considered and assessed during the policy and strategy planning process and technical standards setting, including conducting environmental and alternatives analysis.

Based on current project design, the pilot subprojects at provincial/city levels will be composed of both studies and physical works associated with upgrading of existing coal power plants to the sites of renewable energy with storage, green hydrogen production, and battery energy storage systems installation at wind farms or solar PV stations. The specific information on pilot works such as location, scope and scale is pending for confirmation during project preparation. An environmental audit will be conducted for candidate existing coal power plants, and the project will only invest in facilities that already meet the applicable national standard for pollutant emissions with no legacy or historical compliance issues.

Given the nature of potential physical works, the adverse environmental impacts during construction phase would mainly include general construction nuisance of dust, noise, soil disturbance, traffic safety, waste disposal, and disturbance to modified habitats, which are generally temporary, short-term, localized, and could be effectively avoided, reduced or mitigated through adopting mature civil work techniques and good management practice. Any new construction or rehabilitation that may cause negative impacts on critical habitats or natural habitats will be excluded. Fire and explosion risks during hydrogen facilities and BESS construction and operation can be well controlled by following national design standards with safety considerations, including placement criteria, fire and explosion prevention measures and emergency response requirements. Planning for battery waste management will require the review of current recycling technologies and practices in China. The environmental impacts assessment will compare domestic standards with the Bank's Environmental Health and Safety guidelines and good international industrial practices (GIIP), and determine more stringent performance criteria for the battery operation and disposal.

The project social scale varies a bit among the policy and technical support to improve RE penetration and pilots to move away from coal. Implementing the policy support (component 1) and the support to technology improvement to apply battery storage in the power system (component 2) would have broader social effects than the pilots (component 2). Components 3 (capacity building and project management) is unlikely to bring significant risks. The project and the pilots themselves would have moderate social risk and impact, largely associated with the risk of potential inadequate stakeholder engagement over the period of technical study. However, application of the advice proposed by the technical study would have downstream social changes such as worker retrenchment and livelihood impact (by repurposing coal power plants), site-specific OHS risk (similar to the RE battery storage investment), land acquisition and resettlement (RE investment), and exclusion risks to vulnerable groups, for which the technical study shall take it into account before formulating appropriate and strategic advice consistent with relevant ESSs. Impacts on ethnic minorities will be further revisited by baseline scoping assessment to understand the project's nature and geographical implications. The Bank team will further identify and review the social risks (particularly downstream risks) during preparation per relevant ESSs.

As details of TAs and pilot subproject activities will only be confirmed during project preparation and implementation, an ESMF will be prepared prior to project appraisal to 1) state the principles for integrating E&S analysis into design and implementation of TAs and pilots; 2) provide the procedure for E&S screening and subsequent assessment of TAs and pilots; 3) state the requirements on E&S instruments for TAs and pilots.

Upload available ESS supporting documents.

Title	Submitted
Concept ESRS China Energy Transition	

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Xiang Peng	Deputy Director, International and Economic and Financial Cooperation Department	Ministry of Finance	3/10/2021

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place



