China Energy Transition Towards Carbon Neutrality Project

Review CEO Endorsement and Make a recommendation

Basic project information

GEF ID

10770
Countries

China
Project Name

China Energy Transition Towards Carbon Neutrality Project
Agencies

World Bank
Date received by PM

10/13/2023
Review completed by PM

10/19/2023
Program Manager

Remy Ruat
Focal Area

Climate Change
Project Type

FSP

PIF □
CEO Endorsement □

Part I ? Project Information

Focal area elements

1. Does the project remain aligned with the relevant GEF focal area elements as presented in PIF (as indicated in table A)?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

1. Thank you, the document is well received.

	PIF stage	CEO ER stage
Scope under Component 2	Demonstration cases of accelerated energy transition in selected provinces. The pilots will be a key solution to achieve the zero carbon emission in Shanxi and other selected provinces/cities: Pilot coal power repurposing Pilot green hydrogen production Pilot large scale development of battery storage with RE Integrated solutions to pilot earlier carbon emission peaking and zero carbon emission	Support the pilot implementation of selected approaches to address key barriers to the energy transition in the electricity and heating sector at provincial level: Heating sector decarbonization Renewable energy integration Promoting renewable energy consumption on demand side Reflecting the latest sectoral development and provincial needs in the electricity and heating sector
WB co-financing	US$350 million from the IBRD loan of Shanxi DPO Phase 1	US$300 million from the IBRD loan of Heating Sector Decarbonization in Shaanxi * Shanxi DPO has been dropped
GHG emissions mitigated	80 MtCO2e over lifetime (0 direct)	73.6 MtCO2e over lifetime (4.4 MtCO2e direct)

Number of direct beneficiaries	4,100,000 (female: 1,300,000) A rough estimate of projected job creation from incremental RE development, based on global statistics	320,000 (female: 156,000) Number of people that will benefit from direct investment in heating sector decarbonization in Shaanxi from GEF and IBRD co-financing
GEF grant allocation by component	Component 1: $2.5m Component 2: $12.5m Component 3+PMC: $2.43m	Component 1: $4.5m Component 2: $10.5m Component 3+PMC: $2.43m

2. Well noted

3. Thank you for the revisions

4. Thank you for the useful clarification.

RR (10/13/2023):

1. Per usual practice for ease of reading and given changes in scope, please provide an introductory table summarizing the main changes between PIF stage and CEO ER stage.

2. Please revise the current focal area objective "CCM-1-1, De-centralized renewable power with energy storage" to add CCM1.3 as detailed below.

The project remains aligned with the relevant CCM focal area programming directions, in spite of the change in scope related to the revised co-financing, focusing more on renewable energy integration, energy efficiency, grid and demand-side management (also noting that green hydrogen is now dropped from the scope of GEF-supported pilots), rather than direct decommissioning of coal power for replacement by renewables.

The project now aligns with objective CCM-1 : Objective 1. Promote innovation and technology transfer for sustainable energy breakthroughs and its following sub-objectives :

- CCM1.3 Accelerating energy efficiency adoption, for the components related to heating sector reforms and investments (improved planning, regulations for geothermal district heating, platform for smart metering in buildings, building renovation schemes, sharing lessons);

- CCM 1.1 De-centralized renewable power with energy storage, for components with grid modernization interventions and innovations for renewable energy integration / energy storage, per initial understanding at PIF stage.

3. Please note however that financing of large scale grid-connected renewable energy facilities is not eligible for GEF CCM financing. On that regard, the PAD references interventions related to enhancing renewable energy integration capacity including solar thermal generation facilities (the PAD further outlines that new storage capacity is usually developed jointly with additional variable renewable energy capacity, per national

regulations). Clarification would be useful to confirm that GEF financing is not expected to directly support grid-connected large scale renewable capacity development.

4. A confirmation would also be useful to clarify that interventions pertaining to renewable energy integration and grid modernization covered by this project will not cover efficiency improvement/retrofitting of coal and gas-fired thermal power plants (which are mentioned in several instances in the context sections of the PAD including paragraph 8), as this would also not be eligible to GEF financing per programming directions.

Agency Response

1- Provided in a separate document.

2- GEF datasheet submission updated as advised

3- GEF financing will not directly support grid-connected large scale renewable capacity development. A sentence was added in para 26 (b) of the PAD and para 22 (b) of the PID.

4- Para 8 of the PAD is about the sectoral context in China, not about project activities. The project will not support any efficiency improvement or retrofitting of coal and gas-fired thermal power plants.

Project description summary

2. Is the project structure/design appropriate to achieve the expected outcomes and outputs as in Table B and described in the project document?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

1. Thank you for the expansion, which however does not clarify how project outputs will lead to project outcomes. Referring this clarification to item I.7 of the review sheet and clearing this item.

2. Thank you for the useful update.

3. Thank you for making these expense categories consistent, it is noted that component 2 includes both technical assistance and investment.

4. Noted.

5. Noted.

RR (10/3/2023):

1. The modality through which indirect GHG emission reductions will be achieved remains unclear in the current project document and would benefit from clarification on how the outputs of project interventions are expected to lead to the outcomes identified in the PAD, which refer back to the China CCDR report (see comment in section I.7 below).

2. Component 2 in table B features mostly research activities, which would by themselves not be eligible to GEF financing. These seem in their current wording also redundant with activities described in component 1. The articulation with policy interventions and pilots, as described for the first example of this component (suggestions on provincial policy and regulatory framework and institutional capacity building for heating sector decarbonization) should also be made clear for the rest of the component (on grid operation and dispatch practice for the optimal use of various energy storage technologies and interprovincial transmission for improving renewable energy integration; the development of scheme to expand green electricity certificates and other instruments to monitor green energy consumption on demand side and promote low-carbon transition of industrial parks). This is also relevant for component 1 for the parts related to "research on improving interprovincial transmission arrangement and energy storage deployment for renewable energy integration" and "assessment of policy framework to support a just transition of coal-dependent regions".

3. Table B and its component 2 which describe mostly TA interventions do not match the investments and goods/equipment described in the the project budget table, which include procurement of "equipment for digitalizing grid operation and dispatch practice or monitoring renewable energy consumption on demand side." for $2 million, $3 million for provincial pilot and demonstration. Clarification and revisions would be welcome.

4. There seems to be a difference in table B between the total amount provided, for component 3, in table B ($ 1,681,193) and in the budget in Annex E ($ 1,131,193).

5. From a policy perspective, on the PMC: the co-financing contribution to PMC is not proportionate compared with the GEF contribution to PMC. If the GEF contribution is kept at 4.4%, for a co-financing of $300,000,000 the expected contribution to PMC would be expected around $13,200,00 instead of $2,000,000 (which is 0.6%). As the costs associated with the project management must be covered by the GEF portion and the co-financing portion allocated to the PMC, the GEF contribution and the co-financing contribution must be proportional, which means that the GEF contribution to PMC might be decreased and the co-financing contribution to PMC might be increased to reach a similar level. Please amend either by increasing the co-financing portion and/or by reducing the GEF portion.

Agency Response

1 - Para 32 of the PAD has been expanded to clarify how outputs of the project will lead to the expected outcomes.

2- Planned activities are not research ? it was a translated term from Chinese. Difference between Component 1 and 2 is that under Component 2 the selected provinces will implement new policies, regulations, reforms and approaches, which will be informed by the project, and pilot them to specific sites during project implementation period, while Component 1 focuses on developing national-level policies and regulations to guide provinces. The results of the pilot will be delivered during implementation and will further inform national and provincial policy and regulatory framework for scale up and replication. The description in Table B has been updated.

3- Component 2 includes procurement for equipment for digitalizing grid operation and dispatch practice and monitoring renewable energy consumption on demand side, which are part of the provincial pilot and demonstration to implement new monitoring and operating mechanisms. Table B has limited space so equipment purchase was not listed but now is added. At the time of submission, grant for Shaanxi provincial pilot was supposed to be provided as sub-grant but implementation arrangement has changed. The budget table has been updated accordingly.

4- In Table B, Component 3. Capacity Building and Project Management includes M&E budget, which is listed separately in the budget table in Annex E. The total amount is consistent.

5 - GEF PMC is adjusted to US$174,000 and PMC for co-financing is increased to US$3,000,000. Respective PMC is about 1 percent of GEF and co-financing each consistently.

3. If this is a non-grant instrument, has a reflow calendar been presented in Annex D?

Secretariat Comment at CEO Endorsement Request
N/A.

Agency Response n/a
Co-financing

4. Are the confirmed expected amounts, sources and types of co-financing adequately documented, with supporting evidence and a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized, and a description of any major changes from PIF, consistent with the requirements of the Co-Financing Policy and Guidelines?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023):

1. Thank you for the submission, well received.

RR (10/13/2023):

1. Co-financing letters from NEA and WB are not yet provided. thank you for submitting these in the related portal section.

-

The major changes from PIF are well documented : the co-financing loan of US$ 300 million initially envisaged has been replaced by another loan of the same amount, under appraisal, with a scope that contributes to the overall project objectives, in a more indirect way, through renewable energy integration, energy efficiency, grid and demand-side management, rather than direct decommissioning of coal power for replacement by renewables.

The executing agency (NEA) provides US$2 million of budget allocation and in-kind support from technical experts.

Agency Response Co-financing letters have been prepared for submission and attached
GEF Resource Availability

5. Is the financing presented in Table D adequate and does the project demonstrate a cost-effective approach to meet the project objectives?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023):

With current number the project is cost-effective. To be updated at MTR.

RR (10/13/2023):

1. Pending clarifications on indicator 6 (GHG emission reductions) calculations and incremental cost reasoning.

Agency Response Clarifications provided
Project Preparation Grant

6. Is the status and utilization of the PPG reported in Annex C in the document?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (10/13/2023):

N/A. No PPG is requested.

Agency Response Thank you
Core indicators

7. Are there changes/adjustments made in the core indicator targets indicated in Table E? Do they remain realistic?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023):

1 and 3. Thank you for the justification, well noted. There are several assumptions, including the 30% attribution factor, that will warrant an update at PIR and MTR stage when further clarity is available on project interventions and their impact on the 20% goal of increased renewable capacity outlined in the CCDR. Please not that the use of a given attribution factor for one GEF project does not constitute a baseline of attributability for another project, rather, this should be based on the extent to which project interventions, in line with its theory of change, are expected to result in the described outcome. While clarification is provided on policy level interventions and technical assistance to be provided, how these measures are expected to contribute to an acceleration of 20% as opposed to the baseline will be an area that would be useful to clarify further at MTR stage.

2. Thank you for clarifying that electricity and heating demand in pilot provinces is assumed to remain constant in both scenarios. If the growth of PV and wind is estimated to be faster in alternative scenario, the correlated assumption is then that increased renewable energy accounted for in the calculation is met with an equivalent retirement of existing capacity following the proportions of the current energy mix. It would be useful to justify these assumption based on elements available at MTR stage. Another assumption that will warrant refinement at MTR stage is the extent to which emission factors averaged for the upcoming 5 years adequately represent emission reductions that are totaled over 20 years of lifetime of the investment assets (this also applies to the choice made to consider wind and solar energy with an emission factor of 0).

Thank you for updating in line with GEF guidelines as needed through PIR and MTR reports taking this into account.

RR (10/13/2023):

The 80 million tCO2e of direct emissions reductions are now replaced by 4,4 million tCO2e of direct and 75,6 million tCO2e of indirect emission reductions. Calculations provided in annex 2 of the PAD.

As requested at PIF stage, the adjusted repartition between direct and indirect is consistent with GEF Guidelines, with 4,4 MtCo2e direct emission reductions related to interventions for heating sector decarbonization in Shaanxi province over 20 years of lifetime of investments (from co-financing leveraged), which contain direct infrastructure investments combine with regulatory measures. In other provinces, the 75.6 million tCO2e are the result of "improving policy and regulatory framework at both national and provincial level to facilitate energy transition in the electricity and heating sector and thus enables accelerating renewable energy deployment and the incremental solar PV and wind power generation", which is consistent with the understanding that these indirect impacts involve infrastructures which also have a 20 year lifetime (new solar and wind infrastructure).

Given the adjusted scope and the nature of the adjustment, going from explicit retirement of coal power plants replaced by renewables to indirect reductions through grid, demand-side management and storage interventions (which in turn are accounted for in the calculation mostly through added renewables capacity), the fact that the overall emission reduction targets remains unchanged at 80 million tCO2e is difficult to justify.

For the activity data, i.e. the 1.2 increase (+20%) in renewable energy capacity, justification is provided through a reference to CCDR results, copied here for reference:

"Implement scale up of solar and wind power generation capacity to 1,200 GW by 2030, in line with China?s Nationally Determined Contribution (NDC). While this envisaged scale up is ambitious, analysis undertaken for the CCDR shows that adding more renewable energy capacity, up to 1,700 gigawatts (GW), could advance emissions peaking to earlier than 2030 and result in a significant reduction in cumulative emissions. To do so, China would need to add up to 120 GW of solar and wind capacity every year by 2030, 1.5 times the annual average during 2016?20 and 20 percent more than the capacity addition in 2021. This would enable China to meet incremental electricity demand with renewable energy and reduce coal-based generation from 2025 onwards. This is an ambitious target. Achieving it would require a strong global supply response and increased production capacity for battery and solar/wind components to reduce pressure on prices for these technologies."

However, how the outputs of project interventions are expected to contribute to that ultimate objective of added capacity is unclear in the justification provided (is this expected to happen through results-based mechanism, through upscaling/replication of bottom-up interventions, market generation or mainstreaming mechanisms?).

Additionally, for the emission factor, annex 2 of the PAD does not provide justification for the choice of the 30% attribution factor for indirect emission reductions, and the grid emission factor used also requires clarifications and revisions as appropriate.

1. In line with theory of change assumptions, please provide justification and adjustment, if applicable, for the choice of the 30% attribution factor used for indirect emission reductions.

2. In line with theory of change assumptions, please also clarify and revise as appropriate the choice of the emission factor of 0.57 tCO2e/MWh in association with various categories of activity data (which should also be clarified) in baseline and alternative scenario. This is described as the main grid emission factor, which would entail that the assumption made is that the emission reductions are assumed to happen because new demand is covered by fully decarbonized additional supply. However :

(i) such an assumption is not clarified in the annex ;

(ii) for a calculation consistent with guidelines, the emission reductions should be calculated based on the difference between a baseline and alternative scenario, which in this case would mean calculating the difference between the emission factor from the grid in a BAU scenario and the emission factor from solar and wind (provided that reductions are indeed assumed to happen through coverage of new demand by new supply), which with an LCA approach would not be expected to be 0 ; similarly for heat supply ;

(iii) per described project interventions, it is unclear if the above hypothesis would be justified, as a significant part of the interventions relate to demand-side management (i.e. reduced consumption through energy efficiency, for which justification would also be welcome on how the 0.11 tCO2e per GJ emission factor was derived for prevalent coal-based heating for Shaanxi province interventions), indirect decommissioning of coal plants used for variability coverage through better grid/dispatch management (i.e. for which the emissions factors would rather be for example in baseline coal emission factor and in alternative the average grid emission factor), and finally increased renewables through consumption certificates, through addressing the barrier of variability management on the production side (this seems to be the main tenet in project rationale), and through increased district heat supply from clean energy (although it is unclear in the description how it is expected that RE certificates would lead to added generation capacity with a full equivalency, as opposed to an earmarking of existing consumption or to a partial incentive for new added capacity).

3. After clarifying the above, for the category of activity data related to added renewables capacity, please clarify how this is expected result from project interventions.

Agency Response

(11/3) - 80mT was at PIF stage, no further changes needed

1 - While the Project supports improving policy and regulatory framework at both national and provincial level to facilitate energy transition in the electricity and heating sector and thus enables accelerating renewable energy deployment and the incremental solar PV and wind power generation, it may be a stretch to attribute all the incremental outputs to the Project, as there are other factors that are important determinants, such as financing and pace of deploying technology solutions (e.g., storage, T&D expansion, other grid assets, etc.) to address the challenges of renewable energy integration. Therefore, it should be lower than 100%. Under the China Distributed Renewable Energy Scale Up Project (GEF ID 9749), the attribution factor of 50% was used, and accepted by GEF, to calculate the attributable incremental distributed renewable energy capacity by improving policy and regulatory framework for distributed renewable energy. Considering that this project targets grid-connected renewable energy, which is more mature than distributed renewable energy, the factor was set at 30%, which is lower than 50% used in the other project. For the direct outputs of the IBRD project in Shaanxi, 100 percent is attributed to the Project.

2 - Annex 2 has been updated to clarify the points raised.

(i) Total electricity and heating demand in the pilot provinces is assumed to remain constant between the Baseline Scenario and the Alternative Scenario. The projection is only for five years between 2024 and 2029. The project does not include activities that will cause substantial change in total electricity and heating demand. Under the Alternative Scenario, the growth of solar PV and wind power capacity will be faster than the Baseline Scenario, as the system would have addressed challenges in renewable energy integration to some extent with thanks to the improved policy and regulatory framework to be informed by the project.

(ii) For electricity in the four pilot provinces, grid emission factor under the Baseline Scenario were updated to reflect the changing fuel mix in the grid between 2024 and 2029, using WB staff estimates based on China CCDR analysis. The average of the grid emission factor for six years, which is 0.524 tCO2e/MWh, has been used to calculate indirect emissions reduction from the incremental RE capacity attributable to the project in the four provinces. For heating in Shaanxi, the coal emission factor of 0.11 tCO2e/GJ has been kept, as under the Baseline Scenario, the investment areas will be served by coal-based heating solutions. Under the Alternative Scenario, there may be marginal emissions under the LCA approach from grid-connected solar PV and wind as well as heating from clean energy sources but they are not expected to be significant so assumed to be zero. Please note that avoided GHG emissions estimates have been already calculated conservatively by rounding down annual figures.

(iii) All the selected provinces will benefit from not only provincial pilot and demonstration under Component 2 but also national policies and regulations to facilitate energy transition and address barriers. Through a combination of supply-side and demand-side support, entire China is expected to speed up deployment of solar PV and wind power. This project will capture the incremental renewable energy deployment of the only four provinces where the project supports pilot on electricity sector. For Shaanxi, it is proposed to capture the direct benefit given substantial co-financing to directly support investment in clean energy solutions.

3- Through planned activities under Component 1 and 2, the project will inform legal framework and national and provincial policies and regulations, through technical assistance and pilot demonstration, to help address some of the key challenges identified in continuing to scale up renewable energy development in China. By improving policy and regulatory framework to clearly define sectoral action plans, advance electricity market reform measures related to enhancing pricing, system flexibility and reliability, facilitate renewable energy integration, and promote renewable energy consumption, together with additional capacity building of stakeholders, China is expected enable further increase in the pace of renewable energy development. This project will capture the incremental renewable energy deployment of the only four provinces where the project supports pilot on electricity sector.

Part II ? Project Justification

1. Is there a sufficient elaboration on how the global environmental/adaptation problems, including the root causes and barriers, are going to be addressed?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023):

1. Noted

2. Thank you for the useful clarification. Since NEA expressed interest, confirmed by its co-financing letter, on TA related to green hydrogen, please ensure that adequate coordination takes place with other GEF-financed projects in China on the matter.

3. Thank you for this useful clarification. This paragraph would deserve being featured more centrally in the project theory of change and in the description of its impact.

RR (10/13/2023):

Elaboration is provided in the enclosed PAD, paragraphs 1 to 20 (Section 1).

1. See comments in section 1.7 on core indicators, as there seems to be some room for clarifications on assumptions taken leading to ultimate impact in terms of GEBs.

2. Noting that needs are identified on green hydrogen as a means to improve energy storage for renewable energy generation in the context section of the PAD, please clarify why this is

no longer included as a proposed response in the project design (this can be clarified through the table requested in section I.1 of this review sheet).

3. The PAD points out that " the renewable energy curtailment was brought down to about 2-3 percent after 2020" and that "In 2021, China initiated requiring all utility-scale VRE projects to install battery storage with a capacity of about 10-15 percent of power generation capacity. With such efforts, at the end of 2022, the capacity of pumped storage and battery storage reached 46 GW and 8.7 GW, respectively, keeping the targets on track". Given this progress, could you please clarify what this entails for the baseline scenario in terms of increased need for flexibility and storage in the project timeline and what would be achieved in that regard without the project? This would help to clarify additionality and incremental reasoning as noted in other sections.

Agency Response

1-PAD Annex 2 has been updated to clarify key assumptions raised above.

2- During project preparation, one province expressed interest in implementing provincial pilot and demonstration for green hydrogen, but it decided not to take forward the original proposal. While no green hydrogen-related provincial pilot is included under Component 2, NEA expressed interest in technical assistance to establishing regulations, standards, and certification mechanisms for green hydrogen under Component 1 as part of exploring innovative solutions for renewable energy integration.

3-For energy storage, China CCDR suggests that the required storage capacity is estimated at 200 GW by 2030, roughly a tenfold increase from current levels, and 1,300 GW by 2050 to meet NDC and that to accelerate decarbonization, up to 300 GW of energy storage capacity is needed by 2030 and 1,700 GW by 2050. While energy storage capacity increases quickly in China, driven by policy requirements on large renewable energy developers, it may need to further accelerate to accelerate decarbonization. Furthermore, the current electricity market does not provide adequate compensation for the services and benefits that energy storage can provide to the power system. To scale up investment in energy storage and maximize its benefit to the grid for renewable energy integration, electricity market reform and improvement in grid operation and dispatch practice will be the key driver, where the project delivers additionality.

2. Is there an elaboration on how the baseline scenario or any associated baseline projects were derived?

Secretariat Comment at CEO Endorsement Request

Cleared

RR(11/2/2023):

Noted

RR (10/13/2023):

Lessons learned from baseline projects and elements on elaboration of the baseline scenario are provided in section F of the PAD, paragraphs 35 to 38.

1. See comments in section 1.7 on core indicators, as there seems to be a mismatch between the description of baseline and alternative scenario and their quantification.

Agency Response See response in section 1.7.

3. Is the proposed alternative scenario as described in PIF/PFD sound and adequate? Is there sufficient clarity on the expected outcomes and components of the project and a description on the project is aiming to achieve them?

Secretariat Comment at PIF/Work Program Inclusion

Cleared

RR (10/13/2023):

Noted.

RR (10/13/2023):

Elements on the theory of change of the project are provided in paragraph 32 of the PAD.

1. See comments in section I.7 on core indicators and II.1 on baseline scenario, as there seems to be a mismatch between the description of baseline and alternative scenario and their quantification.

Agency Response See response in section 1.7.

4. Is there further elaboration on how the project is aligned with focal area/impact program strategies?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023):

1. See comment in section I.1 above

Agency Response See response in section 1.1.

5. Is the incremental reasoning, contribution from the baseline, and co-financing clearly elaborated?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023):

1. See comments in section I.7 on core indicators and II.1 on baseline scenario, as there seems to be a mismatch between the description of baseline and alternative scenario and their quantification.

Agency Response See response in section 1.7 and 2.1.

6. Is there further and better elaboration on the project?s expected contribution to global environmental benefits or adaptation benefits?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023):

Elaboration is provided in the enclosed PAD, paragraphs 1 to 20 (Section 1).

1. See comments in section 1.7 on core indicators, given change in scope.

Agency Response See response in section 1.7.

7. Is there further and better elaboration to show that the project is innovative and sustainable including the potential for scaling up?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (10/13/2023):

Yes, especially through the KM approach. Please refer to this section for further clarity.

Agency Response Thank you

Project Map and Coordinates

Is there an accurate and confirmed geo-referenced information where the project intervention will take place?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023):

1. While a map is provided, geographic coordinates are not provided on the portal submission - if available at this stage, it would be encouraged to provide the coordinates, including in annex D.

Agency Response As the project will mainly deliver technical assistance to inform and improve legal, policy and regulatory framework at national and provincial level, and no substantial investment in renewable energy assets is planned, there is no site in these pilot provinces to provide the coordinates.

Child Project

If this is a child project, is there an adequate reflection of how it contributes to the overall program impact?

Secretariat Comment at CEO Endorsement Request

N/A

Agency Response n/a

Stakeholders

Does the project include detailed report on stakeholders engaged during the design phase? Is there an adequate stakeholder engagement plan or equivalent documentation for the implementation phase, with information on Stakeholders who will be engaged, the means of engagement, and dissemination of information?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/3/2023):

The requested paragraph was inserted.

RR (11/2/2023):

1. The information is not provided in the data sheet as required. Please include the requested element directly on the dedicated portal section.

2. Noted with thanks.

RR (10/13/2023):

Stakeholder engagement framework is attached as an annex.

However, there is no report in the CEO ER portal form of stakeholders engaged during the design phase nor information yet on which stakeholders will be engaged, as these are described in the portal form as not yet identified.

Given the changes in project scope and the details already provided on project interventions, stakeholders must have been engaged to reach the current project design (the gender analysis and action plan, and paragraph 55 of the PAD, also point in that direction) - these details should be provided.

1. Thank you for providing in the portal form available details on specific stakeholder consultations carried out in project preparations (including stakeholder engaged engaged so far in the design of the project) as well as plans and activities as related to the GEF financed project. A brief summary of the stakeholder engagement framework would also be useful in terms of stakeholders who will be engaged, the means of engagement, and dissemination of information (this can usefully be based on paragraph 52 to 56 of the PAD).

2. Please see comment below on reflecting results of the gender analysis in the SEF.

Agency Response

(11/3) - Relevant information on stakeholder engagement also added in the portal

1 - The relevant information has been added in the Executive Summary and Chapter 3 of the SEF.

2 - Added on page 14-15 of the SEF where the gender analysis is more relevant.

Gender Equality and Women?s Empowerment

Has the gender analysis been completed? Did the gender analysis identify any gender differences, gaps or opportunities linked to project/program objectives and activities? If so, does the project/program include gender-responsive activities, gender-sensitive indicators and expected results?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

1. Noted with thanks

2. Noted with thanks.

RR (10/13/2023):

A gender analysis and action plan is attached, in consultation with relevant stakeholders, with related results and indicators which are reflected in the results framework in annex 1.

1. Please insert a summary paragraph of this gender analysis and of the gender action plan in the dedicated section of CEO ER form as related to the project objective and components.

2. Please reflect the findings of this analysis as relevant to the project objective and components in the stakeholder engagement framework (SEF) which currently only mentions gender once p28.

Agency Response

1- The gender action plan has been developed, including the gender gap analysis, and submitted as part of the package. As requested, a summary para has been added to the GEF datasheet/included in the submission

2- Added on page 14-15 of the SEF where the gender analysis is more relevant.

Private Sector Engagement

If there is a private sector engagement, is there an elaboration of its role as a financier and/or as a stakeholder?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023)

1. Summary provided in the portal form.

RR (10/13/2023):

1. No information is provided in the CEO ER form. Private sector is briefly mentioned in the SEF for a role as stakeholder. Clarifications and summary description in the portal form would be useful.

Agency Response Information added in the GEF datasheet/submission
Risks to Achieving Project Objectives

Has the project elaborated on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved? Were there proposed measures that address these risks at the time of project implementation?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (10/13/2023):

Mentioned in PAD document, with proposed measures in terms of project implementation (in terms of ESMF, see comments in ESS section). Covid-19 screening provided as an annex to the submission package, and climate risk screening is summarized in paragraph 61 of the PAD.

Agency Response Thank you
Coordination

Is the institutional arrangement for project implementation fully described? Is there an elaboration on possible coordination with relevant GEF-financed projects and other bilateral/multilateral initiatives in the project area?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (10/13/2023):

Mentioned in para 38 of the PAD for the lessons learned with GEF-financed projects, including the GEF-funded China Renewable Energy Scale-Up Program (CRESP) Phase I and II and China Distributed RE Scale-up Project. Coordination with WB CCDR exercise is also mentioned (see comment on core indicator). Finally, annex A of the PAD covers implementation arrangement details.

As green hydrogen is no longer in the scope, coordination with the recently approved GEF-8 green hydrogen project is no longer applicable.

Agency Response Thank you
Consistency with National Priorities

Has the project described the alignment of the project with identified national strategies and plans or reports and assessments under the relevant conventions?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (10/13/2023):

Described in PAD, including in paragraphs 1 to 20 (Section 1) and paragraphs 28 to 30 as well, with an articulation with existing development plan/NDC objectives and alternative CCDR recommendations. Reference is made in particular to the country NDC "1+N" planning framework.

Agency Response Thank you
Knowledge Management

Is the proposed ?Knowledge Management Approach? for the project adequately elaborated with a timeline and a set of deliverables?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/23):

Noted.

RR (10/13/2023):

Provided as an annex to the CEO ER package, with a set of deliverables and a budget.

1. However, no timeline is provided. If applicable, thank you for sharing the timeline (this can be within the PAD). Given that KM is at the core of the expected impact of the GEF contribution to this project as articulated with the WB co-financing, it would be useful to clarify how this would be expected to happen and to feed into national-level policies as described, from a timeline perspective.

Agency Response Timeline information added in the KM plan.
Environmental and Social Safeguard (ESS)

Are environmental and social risks, impacts and management measures adequately documented at this stage and consistent with requirements set out in SD/PL/03?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (10/13/2023):

ESS risks are noted as High or Substantial. CEO Endorsement ES screening is provided with appropriate measures for identified risks, along with with an ESRS annex document (Appraisal Environmental and Social Review Summary).

Environmental : "Implementation of TA activities under the project will not cause any direct adverse environmental impacts but will involve significant stakeholder engagement and potentially have downstream impacts due to the implementation of policy/regulation changes and pilot investments to be informed by the project-supported TA activities, which would need to be considered and addressed during the TA process. The overall environmental risk is therefore rated substantial at this stage given the pilot subproject uncertainty and potential downstream environmental impacts and risks from TA activities."

Social : "The TAs-generated direct social risks include: inadequate stakeholder engagement and exclusion risks of vulnerable groups (ethnic minority, low-income residents, to-be-laid-off workers, etc.), and low health and safety risks for TA consultants during their fieldwork.

Considering the downstream impacts, the ESS5 and ESS8 are also considered in the ESMF. The project social risks are mainly related to ESS1, ESS2, ESS5, ESS7, and ESS10. The overall social risk is deemed as Substantial."

These environmental and social risks are met by measures including a time-bound capacity development plan to be developed in the ESMF and ESCP (yet to be prepared as TA activities are not yet fully determined) to be implemented to support the project implementation, through which the capacity of particularly PMOs at the local level will be strengthened with regards to ESF implementation.

Agency Response Thank you

Monitoring and Evaluation

Does the project include a budgeted M&E Plan that monitors and measures results with indicators and targets?

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/3/2023):

Tables were added.

RR (11/2/2023):

Please include the M&E tables in the Results Framework annex A.

RR (10/13/2023):

1. In the CEO ER portal form, the table of answers to council comment signals that this is yet to be developed by NEA and accepted by the WB, which would be inconsistent with GEF policies and guidelines at this stage. However an M&E plan with indicators and targets and budget, although noted as indicative at this stage, is provided as an annex in the CEO ER package, and in the PAD pages 26 to 29. Please clarify and provide relevant tables in annex A.

Agency Response

(11/3) M&E tables in the Results Framework added in Annex A

The response to the relevant council comment from Canada has been updated. The progress and achievement of the project will be tracked through monitoring and evaluation (M&E)

framework as suggested in the M&E plan, which will be implemented by the PMO housed under NEA.

Benefits

Are the socioeconomic benefits at the national and local levels sufficiently described resulting from the project? Is there an elaboration on how these benefits translate in supporting the achievement of GEBs or adaptation benefits?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/2/2023):

1. Noted

RR (10/13/2023):

1. Presented in the PAD only in the gender section, but not in terms of how these translate in supporting the achievement of GEBs. This could be further clarified (this can be within the PAD or in its annex 2).

Agency Response A para on co-benefit has been added in para 52 of the PAD.
Annexes

Are all the required annexes attached and adequately responded to?

Secretariat Comment at CEO Endorsement Request
Cleared

RR (11/3/2023):

1. Added, thank you.

2. Annex is now within margins, thank you.

RR (11/2/2023):

1. Thank you for including them in annex A of the portal form.

2. Annex B is now off margins (about a fifth of the second column is overlapping).

3. noted.

RR (10/13/2023):

1. Missing annexes include signed co-financing letters and relevant M&E tables in annex A.

2. Formatting related : Annex A is slightly off margins. Please shorten the column ?closing period? (about a third of its current width is overlapping) to fit within the Portal margins.

3. Budget table : Other incremental operating costs is not an eligible activity to be funded by the GEF. Thank you for revising this line.

Agency Response

(11/3) - 1) M & E tables included in Annex A

2) Annex B reformatted

1 - Attached

2- Reformatted, it should be within margins now

3 - Other incremental operating costs are excluded from the budget plan

Project Results Framework

Secretariat Comment at CEO Endorsement Request

Cleared.

RR (11/3/2023):

2. Noted

3. Thank you for the disclaimer which is consistent with past practice for WB projects in China.

RR (11/2/2023):

1. Noted

2. Please include the table directly on the portal form.

3. This is not in line with GEF guidelines. Please consider adding this information on the portal form only, with disclaimers as appropriate with regards to WB practice.

RR (10/13/2023):

Provided in Annex A.

1. See comment on indicator 6 targets numbers

2. See comment on M&E tables to be included

3. Please indicate explicitly the core indicator 6 (both direct and indirect) in the results framework (annex A). There is also an inconsistency in reporting direct emission in the results framework (4MtCO2e reported instead of 4.4 in the core indicator table).

Agency Response

(11/3) - 2) M&E tables included in the portal

3)Disclaimers added in Annex A in the portal

1 - See response above

2-See response above

3- The World Bank does not distinguish direct and indirect GHG emissions so it cannot be done in the results framework. However, I clarified direct and indirect emissions in Annex 2, which can be used as a basis for reporting to GEF.

The core indicator table indicates lifetime direct and indirect emissions. 4.4 MtCO2e was lifetime direct emissions reduction, while 4 MtCO2e (where?) was annual total emission reduction. Anyway, the numbers have been updated reflecting your comments on the core indicator 6 and GEF datasheet/submission and core indicator table have been updated accordingly.

GEF Secretariat comments

Secretariat Comment at CEO Endorsement Request

Cleared

RR(11/3/23):

2. Noted, thank you.

RR (11/2/23):

1. Noted

2. Still pending

3. Noted

4. Noted

RR (10/13/2023) :

Comments flagged at PIF for CEO ER stage are taken into account with regards to gender analysis, climate risk screening.

1. Please refer to comments in section I.7 regarding GHG calculations, bearing in mind this was also highlighted at PIF stage (although some of them are no longer applicable given change in scope).

2. Please also refer to comment in section II with regards to a more comprehensive summary of stakeholder engagement to date, which was also highlighted at PIF stage.

3. Please also refer to comments in section II with regards to private sector engagement, as mobilization of local banks as co-financiers was also highlighted at PIF stage.

4. Please also refer to comment in section I with regards to PMC proportionality, which as also highlighted at PIF stage.

Agency Response

(11/3) - Stakeholder engagement summary provided in portal form

1- see response above

2- see response above

3- see response above

4-see response above

Council comments

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023) :

Answers to Council comments are provided in a table at the end of the form and address satisfactorily the below issues raised :

- implementation potential in connection with 14th Five-Year Plan and other updates in legal context (referred to in country context sections of the PAD)

- synergies with ongoing work on the establishment of China?s national carbon market as well as ongoing work on China?s power market reform (referred to in the PAD and revised project scope)

- risk mitigation measures given high risk rating (refered to in the risk section)

- stakeholder engagement and NDRC role in coordination (refered to in the annexes and in PAD paragraphs on stakeholder engagement)

- targets with regards to existing government plans (articulated in connection with the China CCDR)

- green hydrogen (pilots now out of scope)

1. Please refer to comments in section I.7 on GHG calculations and II.1 on baseline/incremental reasoning to clarify methodology regarding attributability to project interventions as opposed to business as usual, which was also one of the comments by Council at PIF stage.

2. Further clarity would also be useful in terms of how the pilot work or project interventions at city and provincial level will feed into the national policy formulation on energy transition, and measures to ensure accountability at the national, provincial and city levels (referred to in design of component 2 and in the table which notes component 1 will ensure this articulation, with further clarifications useful in terms of timeline).

Agency Response

1 -see response above

2- Response to this council comment from Norway/Denmark has been further elaborated. No provincial pilot and demonstration is planned at city level. Between national and provincial levels, there will be implementation agreements to be signed between NEA and relevant provincial government entities.

STAP comments

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023) :

Answers to STAP comments are provided in a table at the end of the form. Satisfactory answers are provided with regards to comments relating to:

- adequate risk monitoring and evaluation protocol to be put in place in view of high risk rating and adaptive management measures, as noted above.

- climate risk screening, which was further developed as well and summarized in the PAD.

- further details provided on storage options considered, although these do not relate strictly to new battery technologies as noted by STAP (this is due to a change in scope since PIF).

- Green hydrogen, for which clarifications where requested, and which is now out of scope of GEF interventions.

1. Please refer to comments in section I.7 on GHG calculations, which was also one of the comments by STAP at PIF stage.

2. Please refer to comments in section I.2 regarding clarifications on TA content of components 1 and 2.

Agency Response
1- see response above

2- see response above

Convention Secretariat comments

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a
Other Agencies comments

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a
CSOs comments

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a

Status of PPG utilization

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a

Project maps and coordinates

Secretariat Comment at CEO Endorsement Request

Cleared

RR (11/2/2023):

Noted.

RR (10/13/2023)

1. Project maps are provided but not coordinates - if available at this stage, we would encourage sharing the coordinates in this section of the CEO ER ("GEO LOCATION INFORMATION").

Agency Response As the project will mainly deliver technical assistance to inform and improve legal, policy and regulatory framework at national and provincial level, and no substantial investment in renewable energy assets is planned, there is no site in these pilot provinces to provide the coordinates.

Does the termsheet in Annex F provide finalized financial terms and conditions? Does the termsheet and financial structure address concerns raised at PIF stage and that were pending to be resolved ahead of CEO endorsement? (For NGI Only)

Secretariat Comment at CEO Endorsement Request

N/A

Agency Response

n/a

Do the Reflow Table Annex G and the Trustee Excel Sheet for reflows provide accurate reflow expectations of the project submitted? Assumptions for Reflows can be submitted to explain expected reflows. (For NGI Only)

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a

Did the agency Annex H provided with information to assess the Agency Capacity to generate and manage reflows? (For NGI Only)

Secretariat Comment at CEO Endorsement Request **N/A**

Agency Response n/a

GEFSEC DECISION

RECOMMENDATION

Is CEO endorsement recommended? (applies only to projects and child projects)

Secretariat Comment at CEO Endorsement Request

Yes, all comments have been taken into account and the CEO endorsement is recommended.

RR (11/3/2023):

Requested changes were made. Cleared.

RR (11/2/2023):

Remaining format issue to be addressed :

- Stakeholder engagement summary on portal form

- Annex A on portal form (M&E tables and C.I.6 details).

- Annex B off margins

- C.I.6 total update on table E

RR (10/13/2023):

The project design is in good shape. It would be useful in the next iteration to address the following points :

- GHG estimates / incremental reasonning clarifications/revisions

- revised FA alignment given revised scope and scope clarifications

- scope of investment vs TA vs research activities

- socioeconomic benefits and connection with GEBs

- missing co-financing letters

- policy requirements clarifications (stakeholder engagement, private sector, M&E, KM, PMC, budget, gender, results framework)

- remaining PIF stage comments from council, STAP and GEFSEC in connection with the points above

Review Dates

	Secretariat Comment at CEO Endorsement	Response to Secretariat comments
First Review	**10/18/2023**	**11/1/2023**
Additional Review (as necessary)	**11/2/2023**	**11/3/2023**
Additional Review (as necessary)	**11/3/2023**	
Additional Review (as necessary)		
Additional Review (as necessary)		

CEO Recommendation

Brief reasoning for CEO Recommendations

This project is recommended for CEO endorsement.
Using $19 million from China's GEF-7 STAR allocation, this Climate Change Mitigation project is to facilitate energy transition towards carbon neutrality in the electricity and heating sector through supporting development of policies at national level and piloting implementations in selected provinces in China.
The project intends to contribute to the energy transition in the electricity and heating sector, in line with China?s commitment to carbon peaking and carbon neutrality, and global climate change mitigation. It targets activities at a national level as well as in five selected provinces, Shaanxi, Qinghai, Zhejiang, Anhui, and Hainan.

The project has three components: (i) National Policy and Regulatory Framework for the Energy Transition, (ii) Provincial Pilot and Demonstration,(iii) Capacity Building and Project Management.

The project will be executed by China's National Energy Administration (NEA). It leverages $302 million of anticipated co-financing (ratio of 10:1), including $301 million of investment mobilized through a World Bank loan ($300 million expected to be approved in March) and recipient country government contribution ($1 million grant, $1 million in-kind).

The project is expected to lead to the avoidance of 73,4 MtCO2e emissions, including 4,4 MtCO2e of direct GHG emission reductions through the pilot investment and co-financing in the Shaanxi province, and 69 MtCO2e of indirect GHG emission reductions through technical assistance and policy-level interventions. This is based on activities aiming to accelerate renewable energy capacity development through addressing barriers related to storage and renewable energy integration, accelerating development by 20% as compared to the 14th Five-Year Plan and NDC numbers at provincial level in line with national acceleration expected by applying the recommendations of China's Climate Change and Development Report (CCDR). It will also lead to co-benefits in terms of incremental renewable energy installed capacity enabled in the selected pilot provinces (5.37 GW) and to incremental heat supply capacity from clean energy sources in the selected pilot province (2,000,000 GJ). Finally, a total of 320,000 beneficiaries (of which 156,000 female) will be connected to the heating systems that are financed and directly benefit from heat supply from clean energy and improved energy efficiency.

Main changes since PIF stage include the dropping of the previously planned DPO co-financing to instead focus on heating sector decarbonization in Shaanxi province, as well as a change in sectoral focus of pilot investments, dropping part of the focus on coal repurposing and on green hydrogen, with the latter be covered rather by national co-financing, and focus mostly on renewable energy integration and demand-side management. GHG emission reductions estimates will be updated at MTR stage to further clarify assumptions and levers leading to the targeted acceleration based on updated data available.