

# Green hydrogen energy integrated demonstration application project in China

Review PIF and Make a recommendation

## Basic project information

**GEF ID**

11271

**Countries**

China

**Project Name**

Green hydrogen energy integrated demonstration application project in China

**Agencies**

UNIDO

**Date received by PM**

4/13/2023

**Review completed by PM**

5/5/2023

**Program Manager**

Ming Yang

**Focal Area**

Climate Change

**Project Type**

## GEF-8 PROJECT IDENTIFICATION FORM (PIF) REVIEW SHEET

### 1. General Project Information / Eligibility

a) Does the project meet the criteria for eligibility for GEF funding?

b) Is the General Project Information table correctly populated?

#### Secretariat's Comments

4/20/2023 MY:

a) Yes, the project meets the criteria for eligibility for GEF CCM funding.

b) Yes, the General Project Information table is correctly presented.

5/10/2023 MY:

Please address the following comments from the [PPO](#):

1. On Environmental and Social Safeguards: UNIDO has attached the ES screening template and an overall ESS risk of the program is classified as low. During the PPG-phase, an environmental and social management plan will be prepared to screen and avoid/minimize related risks, in particular when selecting locations for the pilot projects. However, environment and social risk ratings in "Risks to Project Preparation and implementation (moderate)" (page 20), "Overall Project Risk Classification (low)" at PIF stage (page 35), and "E&S screening template" (category (B))(page 1) are different. Please make all environment and social risk ratings consistent among "Risks to Project Preparation and implementation (moderate)", "Overall Project Risk Classification (low)", and "E&S screening template" (category (B)) at PIF stage.

2. On Stakeholder Engagement: The project lists stakeholders consulted during PIF development. It also states that Civil society has been consulted. Please clarify which civil society organizations have been consulted and also further elaborate on efforts to develop a Stakeholder Engagement Plan prior to CEO Endorsement.

3. In Portal there are two executing entities: (i) International Hydrogen and Fuel Cell Association (IHFCA); and (ii) Ministry of Industry and Information Technology (MIIT). The PIF shows that only these two entities will execute the project. Nevertheless, the Letter of endorsement and Section "Coordination and Cooperation with ongoing initiatives" stipulates

that the project will be executed by UNIDO. Please revise the project with two actions:

(1) Change the word "Yes" into "No" for the following question:

**Coordination and Cooperation with Ongoing Initiatives and Project.**

Does the GEF Agency expect to play an execution role on this project? Yes

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

(2) In the OFP-signed endorsement letter, please change the following sentence: " If approved, the proposal will be prepared and executed by United Nations Industrial Development Organization. " into "If approved, the proposal will be prepared and executed by the International Hydrogen and Fuel Cell Association (IHFA) and the Ministry of Industry and Information Technology (MIIT)." Then, please submit the revised OFP-signed letter with the revised PIF package.

4. Table "Sources of Funds" in Portal is broken down in two separate rows: one for the GEF Financing + associated Agency fee, another for PPG + associated Agency fee. Please present this in one single line as all resources are mapped to CC Star allocation.

**Sources of Funds for Country Star Allocation**

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
UNIDO	GET	China	Climate Change	CC STAR Allocation	17,440,000.00
UNIDO	GET	China	Climate Change	CC STAR Allocation	327,000.00
Total GEF Resources(\$)					17,767,000.00

5. Knowledge Management: An overall approach to Knowledge Management and Learning has been provided in the Project Description. Proposal includes KM&L deliverables that enable and enhance access to knowledge and information through a knowledge platform and website, international knowledge exchange, research, education, in person or virtual training meetings, seminars and conferences. While the project mentions dissemination of information for public awareness and publicity through industry organization websites, online media, TV, and social media activities, there is no reference to an overall Communication Strategy or Plan.

Please provide a brief description of a project Communications Strategy/Plan for outreach, awareness raising and dissemination of outputs/results. This description can be added to Component 4.

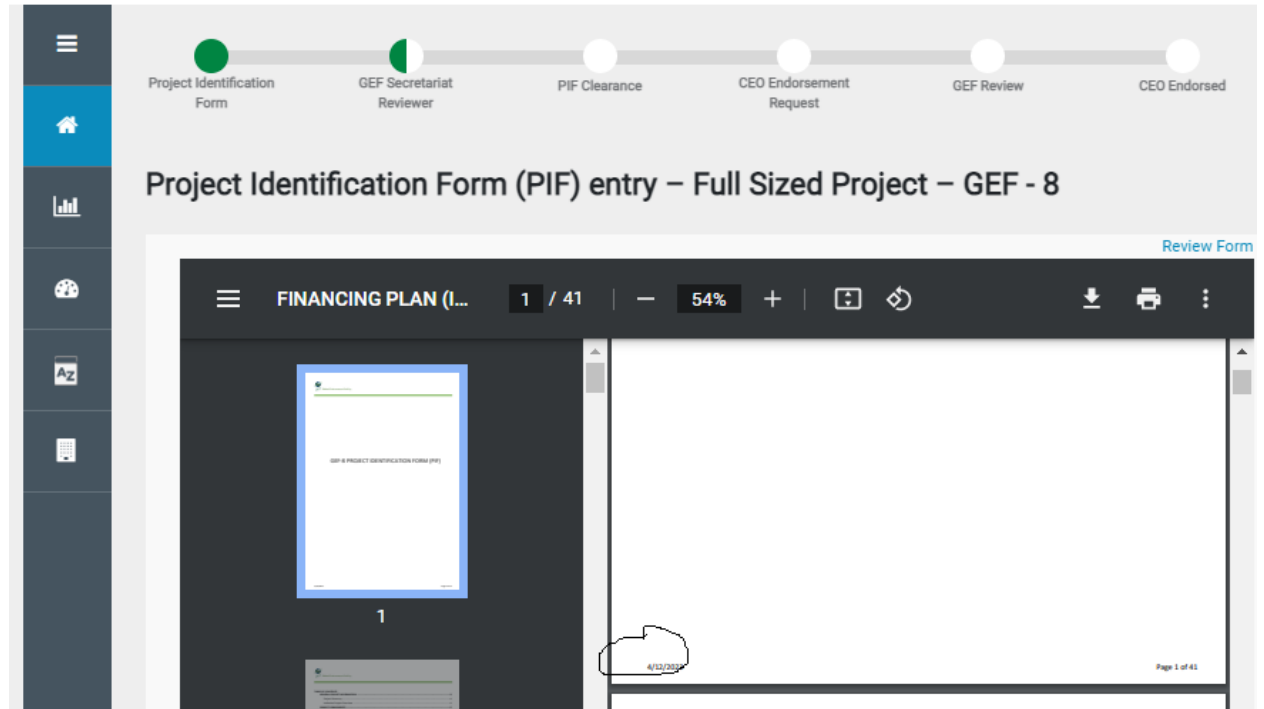
6. Gender: Please integrate gender considerations in Outcome 4. Please ensure gender expertise/women's representation in the Project Steering Committee.

5/16/2023 MY:

Not completed.

In the GEF Portal, the PIF is not updated. Please see below:

## Green hydrogen energy integrated demonstration application project in China



The PM will forward an email of the GEF IT expert to UNIDO for correction actions of uploading the new version of the PIF.

5/16/2023 MY:

Yes, all comments were addressed.

The Agency needs to work with the WB IT team to resolve the issue that does not allow the Agency to update the PIF in front of the GEF Portal.

Agency's Comments  
5/15/23

**Comment #1**

In the risk table, we have aligned the risk rating of 'Environment and Social' with 'Moderate' (PIF Page 31) and added the following sentence: *'The project deploys new green hydrogen integrated application in chemical and transportation industry posing the potential threat to a third party with hydrogen leakage.'*

This is now also aligned the risk analysis on 'Overall Risk Rating' with 'Moderate' (PIF Page 32).

Now, all environment and social risk ratings are consistent among 'Risks to Project Preparation and implementation (moderate)', 'Overall Project Risk Classification (moderate)', and 'E&S screening template' (category (B)) at PIF stage.

#### **Comment #2**

The below sentence was added in the PIF on Page 36.

*In the above table, the consulted Civil Society Organizations during the project identification phase are China Society of Automotive Engineers (CSAE) and International Hydrogen Energy Centre (IHEC).*

The project will follow the core principles of the GEF Policy on Stakeholder Engagement to make further efforts to develop a Stakeholder Engagement Plan prior to CEO endorsement.

#### **Comment #3**

We have unselected 'Yes' (PIF page 29) on the question "Does the GEF Agency expect to play an execution role in the project?".

#### **Comment #3 (2)**

The letter of endorsement has been changed as suggested. The new letter is uploaded in the Portal.

#### **Comment #4**

Table F has been changed in the Portal as requested.

#### **Comment #5**

The below wording has been added to the PIF, highlighted in yellow for easy reference (PIF page 28):

A Knowledge Management Plan and Communication Strategy/Plan for outreach, awareness raising and dissemination of outputs/results will be designed and implemented under the proposed project, which will function as the basis for gathering and distributing all data, information and lessons learned generated during the implementation of the project, promoting the information and education to the interested communities, making the outcomes developed through the project available to the different target audience, receiving inputs and

feedbacks from the various target group, enhancing results exploitation potential and ensuring the outputs sustained after the end of the project lifetime. The final aim is to create a community of knowledge around green hydrogen and emerging energy technology as well as best practices in servicing. As a first step, the plan will foresee a local, regional and international stock-taking of available and relevant information, paying particular attention to the networks of the stakeholders involved. The plan will also include the development of a knowledge management system and a website and associated platform with information accessible by the public as well as direct stakeholders. The knowledge management, dissemination and communication actions will be linked to the exploitation of the project's activities and results. Efficient publicity and wide exposure of the project and its achievements will increase stakeholders' engagement with the initiative of the project on green hydrogen integrated applications and the use of the project results beyond the project's result. The communication and dissemination activities will maximise project impact on prompting dialogues, cooperation, coordination and establishing connections on green hydrogen between China and worldwide players.

Also, the below is added to Component 4 (PIF page 23)

A Knowledge Management Plan and Communication Strategy/Plan for outreach, awareness raising and dissemination of outputs/results will be designed and implemented under the proposed project. The knowledge management, dissemination and communication actions will be linked to the exploitation of the project's activities and results. Efficient publicity and wide exposure of the project and its achievements will increase stakeholders' engagement with the initiative of the project on green hydrogen integrated applications and the use of the project results beyond the project's lifetime. The communication and dissemination activities will maximise project impact on prompting dialogues, cooperation, coordination and establishing connections on green hydrogen between China and worldwide players.

## Comment #6

The below sentence has been added to Outcome 4.1 (PIF Page 24)

*"; and ensure at least 30% women's representation in the project and Project Steering Committee."*

## 2. Project Summary

**Does the project summary concisely describe the problem to be addressed, the project objective and the strategies to deliver the GEBs or adaptation benefits and other key expected results?**

Secretariat's Comments

4/20/2023 MY:

Yes, the objective of the project is to catalyze green hydrogen production and application in Ningdong, Dalian and Shenyang, China, with the aim to decarbonize and support energy transition to net-zero carbon transport for heavy duty trucks in China.

Agency's Comments

### 3 Indicative Project Overview

3.1 a) Is the project objective presented as a concise statement and clear?

b) Are the components, outcomes and outputs sound, appropriate and sufficiently clear to achieve the project objective and the core indicators per the stated Theory of Change?

#### Secretariat's Comments

4/20/2023 MY:

For 3.1 a), Yes. the project objective is presented concisely and clearly.

For 3.1 b), Not completed. The components, outcomes and outputs cover new policy, new technology standards, new guideline to pilot cities, technology investments and demonstrations, case studies, database development, training, M&E, etc. All these looks sound, appropriate and clear to achieve the project objective and the core indicators per the stated Theory of Change.

But the agency may have ignored the impacts of the new policy, new standards and new guideline in a long run. In the project summary, the agency only estimated the direct GHG reduction of 17 million tCO<sub>2</sub> by the project and indirect emission reduction of 51 million tonnes of CO<sub>2</sub>. The latter amount might be underestimated. Please undertake further analysis to re-estimate indirect carbon emission reductions due to the project.

5/4/2023 MY:

Not completed.

Page 28 of the PIF shows the following numbers. Please revise the numbers in the PIF to make them consistent with the statement in the Agency's comments. Please carefully check other part of the PIF to make sure all relevant numbers are revised.

#### Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture)

Total Target Benefit	(At PIF)	(At En)
Expected metric tons of CO <sub>2</sub> e (direct)	17,000,000	
Expected metric tons of CO <sub>2</sub> e (indirect)	51,000,000	
Anticipated start year of accounting	2023	
Duration of accounting	5	

5/5/2023 MY:

Yes, comments were addressed, and issues were cleared.

#### Agency's Comments

Agency Response on comment 3.1.b)

In 2021, China's GHG emissions is 11.9 billion tonnes. Among them, 6.5 billion tonnes is from the industry and transportation sectors. In 2020, China produced about 33 million tonnes of hydrogen, of which green hydrogen accounts for 1%. According to the Medium- and Long-Term Plan for the Development of Hydrogen Energy Industry (2021-2035), China will increase the application of hydrogen energy and green hydrogen in transport and industry. It is assumed that with the synergy of the project, the share of green hydrogen in industry and transport can reach 2%.

The proposed project focuses on reducing the GHG emission from the industry and transportation sector. The estimated **direct GHG reduction is 17 million tCO<sub>2</sub>** during the project duration (5-year project). The estimated life GHG emission reduction is 51million tCO<sub>2</sub> (estimated lifetime of the FCV, refueling stations and other industrial infrastructure are 15-year). The estimated **indirect GHG reduction is 130 million tCO<sub>2</sub>** (2% GHG emission from the industry and transportation sector with the synergies of the project). The indirect GHG figure has been updated in the PIF([Page 31](#)).

**3.2 Are gender dimensions, knowledge management, and monitoring and evaluation included within the project components and appropriately funded?**

Secretariat's Comments

4/20/2023 MY:

Yes. Gender dimensions, knowledge management, and monitoring and evaluation are considered in project component 5 and are appropriately funded. But the agency needs to elaborate more details on this issue in the stage of project endorsement.

Agency's Comments

**3.3 a) Are the components adequately funded?**

**b) Are the GEF Project Financing and Co-Financing contributions to PMC proportional?**

**c) Is the PMC equal to or below 5% of the total GEF grant for FSPs or 10% for MSPs? If the requested PMC is above the caps, has an exception (e.g. for regional projects) been sufficiently substantiated?**

Secretariat's Comments

4/20/2023 MY:

Not at this time.

a) The components are adequately funded except the PMC.

b) In the PIF, it seems that the PMC consists of only GEF funding without any co-financing funding. If it is true, please use some co-financing to cover part of the PMC.

c) Yes, the GEF share for the PMC is below 5%.



5/5/2023 MY:

Yes, co-financing of USD 7,500,000 (i.e. 4,8%) is budgeted in Table B for the project.

Next time, while responding the GEF comments please use page number to indicate the place of revisions of the PIF.

In the future when submitting the project document package, please upload the revised PIF to the project document folder in a way to upload the new letter of endorsement of the OFP. This is to ensure the revised PIF can be seen to the GEF SEC.

### Agency's Comments

**Noted. Done as suggested.**

### Agency Response on comment b)

This is to confirm that the PMC consists of both, GEF funding USD 760,000 (i.e. 4,9%) and co-financing USD 7,500,000 (i.e. 4,8%) as shown in Table B.

<a href="#">+ Add New</a>			
	Sub Total (\$)	15,240,000.00	153,400,000.00
<b>Project Management Cost (PMC)</b> ⓘ			
GEF Trust Fund	760000	7500000	
<a href="#">+ Add New</a>			
	Sub Total(\$)	760,000.00	7,500,000.00
	Total Project Cost(\$)	16,000,000.00	160,900,000.00

## 4 Project Outline

### A. Project Rationale

#### 4.1 SITUATION ANALYSIS

**a) is the current situation (including global environmental problems, key contextual drivers of environmental degradation, climate vulnerability) clearly and adequately described from a systems perspective?**

**b) Are the key barriers and enablers identified?**

## Secretariat's Comments

4/20/2023 MY:

- a) Yes. Pages 9-10 address the current situation, including global environmental problems, key contextual drivers of environmental degradation, climate vulnerability from a system perspective.
- b) Yes, pages 10-12 identify the baseline, key barriers and enablers.

## Agency's Comments

### 4.2 JUSTIFICATION FOR PROJECT

- a) Is there an indication of why the project approach has been selected over other potential options?**
- b) Does it ensure resilience to future changes in the drivers?**
- c) Is there a description of how the GEF alternative will build on ongoing/previous investments (GEF and non-GEF), lessons and experiences in the country/region?**
- d) are the relevant stakeholders and their roles adequately described?**

## Secretariat's Comments

4/20/2023 MY:

- a) Yes. Other potential options are discussed on pages 12-13.
- b) Not completed yet. Please elaborate how to ensure the project outputs will be resilient to future changes in drivers. For example, China may get a long-term oil import contract from an oil rich country in the future. How can China continually promote green hydrogen technologies to address the drivers of GHG emissions in the transport in a situation where there is plenty of cheap oil or natural gas resources?
- c) Yes, the alternative scenario is addressed on pages 19-23.
- d) Yes, relevant stakeholders and their roles are described on pages 24-25.

5/5/2023 MY:

For the responses on b) in the PIF stage:

Yes. Generally the revised PIF addressed the issue such as using tax credit policy and incentive policy, etc. to make green hydrogen more cost-competitive against fossil fuels.

However, more detailed information is needed on the current status of the tax credits and other incentives, new policy development via this project, and expected achievement of

the new policy implementation in China. Please present the detailed information at the CEO Endorsement stage.

### Agency's Comments

Working on the issue of the tax credits and other incentives as suggested, will prepare the detailed information at the CEO Endorsement stage.

For the comments on b). Below description is added into the PIF with highlight (Page 21)

The proposed project ensures the resilience to future changes mainly by enhancing the climate technology and balance of its supply chains. The resilience-building needs coordinated effort with the public and private sectors. Green hydrogen is a conversion, not an extraction business, and has the potential to be produced competitively in many countries. China is one of them. As the costs of green hydrogen fall, new and diverse investors will enter the market, making hydrogen even more competitive comparing to oil or natural gas resources.

There are several key strategies that will be implemented to help promote the use of green hydrogen with the central and local governments? action through the project implementation as foreseen:

Incentivize green hydrogen production: the governments will offer financial incentives for the production of green hydrogen. This could include subsidies, tax credits, or other incentives that make green hydrogen more cost-competitive with fossil fuels.

Develop infrastructure: the governments will invest in the development of green hydrogen infrastructure, such as refueling stations, pipelines, and storage facilities. This can help make it easier and more convenient for consumers to adopt green hydrogen technologies.

Mandate the use of green hydrogen: the governments will require that a certain percentage of fuel be derived from green hydrogen, similar to renewable energy development before in China. This could be done through a renewable fuel standard or similar regulation.

Promoting green hydrogen requires a multi-faceted approach and collaboration with industry stakeholders. By taking a comprehensive approach, it should be resilient and be possible to create an enabling market for green hydrogen that can withstand the challenges posed by cheap fossil fuels in China.

Up to now, China has issued a lot of incentive policies to promote the green hydrogen from central to the local government as addressed in the 5-year plan, which will be implemented and continuously supported in the country?s future plans on the basis of the experience gained from other projects. The proposed project will work with the governments closely to continue above said strategies and actions.

## **5 B. Project Description**

### **5.1 THEORY OF CHANGE**

**a) Is there a concise theory of change that describes the project logic, including how the project design elements will contribute to the objective, the expected causal pathways, and the key assumptions underlying these?**

**b) Are the key outputs of each component defined (where possible)?**

Secretariat's Comments

4/20/2023 MY:

a) Yes. A concise theory of change describing the project logic, project design elements, the expected causal pathways, and the key assumptions are shown on pages 18-20.

b) Yes, all outputs of each component are defined on pages 5-7.

Agency's Comments

## **5.2 INCREMENTAL/ADDITIONAL COST REASONING**

**Is the incremental/additional cost reasoning properly described as per the Guidelines provided in GEF/C.31/12?**

Secretariat's Comments

4/20/2023 MY:

Not completed. Please follow the Guidelines provided in GEF/C.31/12 to complete the following basic steps in incremental/additional cost reasoning:

(a) determination of the environmental problem, threat, or barrier, and the "business as-usual" scenario (or: What would happen without the GEF?) (Ok)

(b) identification of the global environmental benefits (GEB) and fit with GEF strategic programs and priorities linked to the GEF focal area (Focal Area Strategies and Strategic Programming Framework for GEF-4, GEF/C.31/10); (Ok)

(c) development of the result framework of the intervention; (it seems not completed)

(d) provision of the incremental reasoning and GEF's role; (it seems not completed)

(e) negotiation of the role of co-financing (it seems not completed).

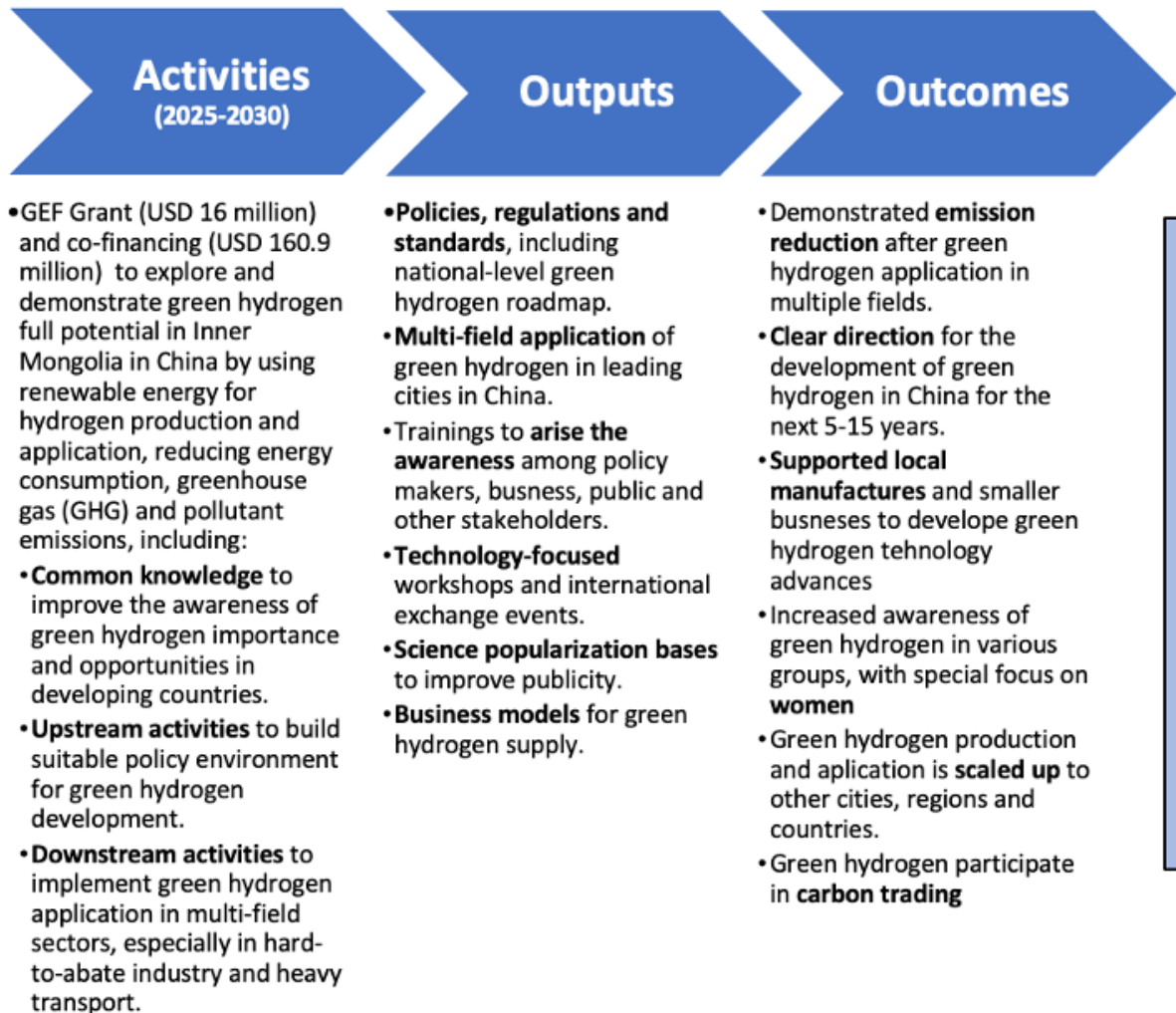
5/5/2023 MY:

Yes, comments were addressed.

### Agency's Comments

For the comments on c), below description and a figure of the result framework of interventions are added into the PIF with [highlight\(Page 17\)](#)

The inclusion of interventions focusing on the major support infrastructures for the FCV market, which are the facilities for green hydrogen production and hydrogen refueling, are among the innovations in this proposed project. This project will support innovative large-scale demonstration application of green hydrogen, and will lead breakthroughs in policies, standards and regulations; greatly increasing the proportion of green hydrogen energy in the energy structure and reducing carbon dioxide emissions. It will provide roadmap application scenarios of green hydrogen energy, and promote the supply side of the green hydrogen energy industry.



For the comments on (d), below description is added into the PIF with highlight (Page18),

There have been initiatives carried out in the past in China aimed towards to commercialization of fuel cell technology in transportation; however, none in the proposed scale and multisectoral coverage. The proposed project is expected to achieve a modest unit abatement cost (UAC) of about \$0.94/ton CO<sub>2</sub> (GEF US\$ per ton GHG mitigated) by deploying 500 multi-function hydrogen fuel heavy trucks, 8 units of hydrogen refuelling stations, the large-scale application of green hydrogen in the chemical industry built, with the aim to achieve 10,000 tonnes of green hydrogen coupling, and a new power system up to 10MW with an integrated micro-grid of hydrogen energy storage, etc..

For the GEF's roles, GEF is expected in supporting the development and implementation of innovative technologies for green hydrogen in a more sustainable and environmentally friendly way. GEF can leverage funding and development, provide technical assistance to project stakeholders, and promote knowledge-sharing and capacity-building activities to help increase awareness and understanding of the potential environmental benefits of green hydrogen.

For the comments on (d), below description is added into the PIF with highlight (Page 19),

The sources of co-financing consist of the investment from the public and private sectors in the type of grant and in-kind such as the selected city-local government and the enterprises: Sinopec, CHN Energy, Meijin Energy, Baofeng Energy, and vehicle and infrastructure companies. At present, it is critical to receive GEF investment synergizing and mobilizing the investment at the up-taking phase of green hydrogen energy. Once the enabling market environment is built, it will enhance the confidence of investors for future projects on green hydrogen.

### **5.3 IMPLEMENTATION FRAMEWORK**

**a) Is the institutional setting, including potential executing partners, outlined and a rationale provided?**

**b) Comments to proposed agency execution support (if agency expects to request exception).**

**c) is there a description of potential coordination and cooperation with ongoing GEF-financed projects/programs and other bilateral/multilateral initiatives in the project area**

**d) are the proposed elements to capture and disseminate knowledge and learning outputs and strategic communication adequately described?**

Secretariat's Comments

4/20/2023 MY:

Not completed yet.

a) and b) The PIF contains some information on institutional setting, but not clear and enough. Please write a special section on implementation framework and draw a chart to show the relationship amount various project stakeholders, with a focus on executing partners, support of the national government and the implementing agency, co-financers, CSOs, and private investors.

c) It seems that there is not any description of potential coordination and cooperation with ongoing GEF-financed projects/programs and other bilateral/multilateral initiatives in the project area. If it is true, please add this information.

d) Yes, component 4 is particularly designed for this purpose.

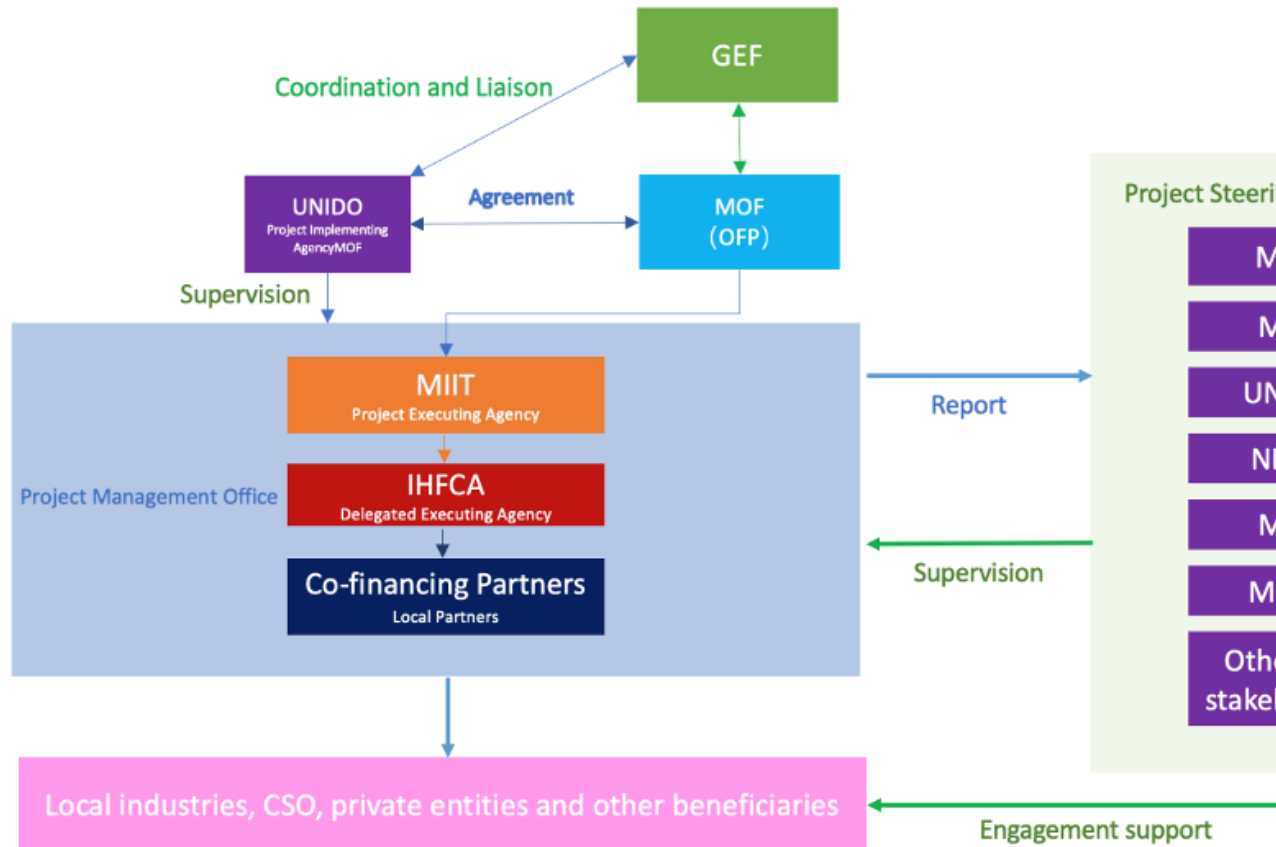
5/5/2023 MY:

Yes, all comments were addressed.

#### Agency's Comments

For the comments on a) and b), Figure 3 Project Implementation Chart is added into the PIF, where with the description on implementation framework, with highlight (Page27).

[Figure 3 Project Implementation Chart](#)



For the comments on c). There is description under the coordination and cooperation with ongoing GEF-financed projects/programs.

The proposed project will benefit from existing support structures already built in the following two projects:

Demonstration for Fuel-Cell Bus Commercialization in China (Phase I- GEF ID 941 and Phase II GEF ID 2257). This two-phased project specifically showcased the application of fuel cell bus technology in public bus transport systems in Beijing and Shanghai. Important lessons learned from this project, particularly on the logistical and administrative requirements of the implementation of the demonstrations, will be taken into account and put to good use in the design of the proposed project.

Accelerating the Development and Commercialization of Fuel Cell Vehicles in China (GEF ID 5728). The project's objective is to facilitate commercialization of FCVs in China through a multi-pronged strategy that will enable China to promote its FCV durability/performance improvements and cost reductions far beyond what would be achieved in the baseline scenario, and to get more FCVs on the road by the end of the project than would occur in the baseline scenario.

The project will create synergies with pre-existing interventions (i.e., projects, Programmes for Country Partnership and/or Country Programmes) in particular in terms of the facilitation of partnerships, networks, knowledge building and raising awareness.

Main examples of synergies with projects include:



? GEF-World Bank project "Green Hydrogen Support in Developing Countries" (GEF ID 10918)

? UNIDO Global Programme for Green Hydrogen in Industry

? GEF-UNIDO project "Integrated Adoption of New Energy Vehicles in China" (GEF ID 9226)

? GEF-World Bank projects "China Distributed Renewable Energy Scale-up" Project (GEF ID 9749), "Achieving Efficient and Green Freight Transport Development" (GEF ID 9682), "China Sustainable Cities Integrated Approach Pilot" (GEF ID 9223)

? UNIDO Projects "Supporting establishment of IHEC", "Supporting the UNIDO Centre for South-South Industrial Cooperation (UCSSIC) in China (3rd Phase)", "Development of a Knowledge Product and a Series of Expert Group Meetings (EGMs) on Best Practices and Pathways for Decarbonization of Industry and Utilization of Hydrogen Technology in Cooperation with KEA and KEEI", and "Preparatory Phase for the Clean Energy Centre of the Economic Cooperation Organization".

**5.4 a) Are the identified core indicators calculated using the methodology included in the corresponding Guidelines (GEF/C.54/11/Rev.01)?**

**b) Are the project's indicative targeted contributions to GEBs (measured through core indicators)/adaptation benefits reasonable and achievable?**

#### Secretariat's Comments

4/20/2023 MY:

a) and b) Not completed yet. The expected GHG reduction is about 17 million metric tons of CO<sub>2</sub>e which looks reasonable. But the indirect emission reduction is estimated at 51 million. China is a huge country with many opportunities to scale up the project benefits via new policy, new standards, and new regulation. This indirect emission reduction might be underestimated.

5/5/2023: MY:

Yes, comments were addressed and the PIF was revised.

However, during the project preparation period, the calculation of GHG mitigation must be undertaken with the guidance of GEF GHG accounting methodologies. At the CEO endorsement stage, please provide detailed and strong argument and justification on using 2% in the scenario for indirect GHG reduction calculation.

#### Agency's Comments

Noted. Working on the calculation of GHG mitigation with the guidance of GEF GHG accounting methodologies and will prepare for the CEO Endorsement stage.

For the comments on a) and b),

In 2021, China's GHG emissions is 11.9 billion tonnes. Among them, 6.5 billion tonnes is from the industry and transportation sectors. In 2020, China produced about 33 million tonnes of hydrogen, of which green hydrogen accounts for 1%. According to the Medium- and Long-Term Plan for the Development of Hydrogen Energy Industry (2021-2035), China will increase the application of hydrogen energy and green hydrogen in transport and industry. It is assumed that with the synergy of the project, the share of green hydrogen in industry and transport can reach 2%.

The proposed project focuses on reducing the GHG emission from the industry and transportation sector. The estimated **direct GHG reduction is 17 million tCO<sub>2</sub>** during the project duration (5-year project). The estimated life GHG emission reduction is 51million tCO<sub>2</sub> (estimated lifetime of the FCV, refueling stations and other industrial infrastructure are 15-year). The estimated **indirect GHG reduction is 130 million tCO<sub>2</sub>** (2% GHG emission from the industry and transportation sector with the synergies of the project). The indirect GHG figure has been updated in the PIF.

**5.5 NGI Only: Is there a justification of financial structure and use of financial instrument with concessionality levels?**

Secretariat's Comments

4/20/2023 MY:

N/A

Agency's Comments

**5.6 RISKS**

**a) Are climate risks and other main risks relevant to the project described and addressed within the project concept design?**

**b) Are the key risks that might affect the project preparation and implementation phases identified and adequately rated?**

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

Secretariat's Comments

4/20/2023 MY:

a) and b) Yes. Climate risks and other main risks relevant to the project are briefly described on pages 29-32.

c) Yes, UNIDO attached a PDF file to address the environmental and social risks, impacts and management measures .

Agency's Comments

**5.7 Qualitative assessment**

- a) Does the project intend to be well integrated, durable, and transformative?
- b) Is there potential for innovation and scaling-up?
- c) Will the project contribute to an improved alignment of national policies (policy coherence)?

Secretariat's Comments

4/20/2023 MY:

- a) Yes. This standalone CCM project intends to be durable and transformative.
- b) Yes, as shown on pages of 26, there is a potential for transformation, innovation, and scaling up.
- c) Yes, as shown on pages 25-26, the project is an improved alignment of national policies.

Agency's Comments

**6 C. Alignment with GEF-8 Programming Strategies and Country/Regional Priorities**

**6.1 Is the project adequately aligned with focal area and integrated program strategies and objectives, and/or adaptation priorities?**

Secretariat's Comments

4/20/2023 MY:

Yes. The project is well aligned with CCM focal area strategies and objectives.

Agency's Comments

**6.2 Is the project alignment/coherent with country and regional priorities, policies, strategies and plans (including those related to the MEAs and to relevant sectors)**

Secretariat's Comments

4/20/2023 MY:

Yes. The project is well aligned with China's and regional priorities, policies, strategies and plans.

#### Agency's Comments

**6.3 For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e. BD, CC or LD), does the project clearly identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and how it contributes to the identified target(s)?**

#### Secretariat's Comments

4/20/2023 MY:

N/A

#### Agency's Comments

#### **7 D. Policy Requirements**

**7.1 Is the Policy Requirements section completed?**

#### Secretariat's Comments

4/20/2023 MY:

Yes. It is shown on pages 33-35.

#### Agency's Comments

**7.2 Is a list of stakeholders consulted during PIF development, including dates of these consultations, provided?**

#### Secretariat's Comments

4/20/2023 MY:

Yes. The list is shown on pages 15-17.

#### Agency's Comments

#### **8 Annexes**

**Annex A: Financing Tables**

**8.1 Is the proposed GEF financing (including the Agency fee) in line with GEF policies and guidelines? Are they within the resources available from (mark all that apply):**

**STAR allocation?**

Secretariat's Comments

4/20/2023 MY:

Yes. Annex A with Financing Tables is presented on pages 35-38. The GEF project funding is within the available resources on STAR allocation of China.

Agency's Comments

**Focal Area allocation?**

Secretariat's Comments

4/20/2023 MY:

Yes. The GEF project funding is within the available resources in CCM on STAR allocation of China.

Agency's Comments

**LDCF under the principle of equitable access?**

Secretariat's Comments

4/20/2023 MY:

N/A

Agency's Comments

**SCCF A (SIDS)?**

Secretariat's Comments

4/20/2023 MY:

N/A

Agency's Comments  
**SCCF B (Tech Transfer, Innovation, Private Sector)?**

Secretariat's Comments  
4/20/2023 MY:

N/A

Agency's Comments  
**Focal Area Set Aside?**

Secretariat's Comments  
4/20/2023 MY:

N/A

Agency's Comments  
**8.2 Is the PPG requested within the allowable cap (per size of project)? If requested, has an exception (e.g. for regional projects) been sufficiently substantiated?**

Secretariat's Comments  
4/20/2023 MY:

Yes. The PPG share from the GEF is within the allocable cap.

However, there seems an error in the GEF Financing Table on page 36. The last row in the upper Table on page 36 shows "Total PPG Amount". It should be "Total Amount". Please double check it.

5/5/2023 MY:

Yes, per the PIF submitted by the Agency via email (the PM saved it in the project folder), the PPG is within the cap.

### Agency's Comments

From our end, the GEF Financing Table shows "Total Amount" at the bottom. Should you still see "Total PPG Amount", we could reach out to ITS colleagues and ask them for support with the Portal from the back-end.

**8.3 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?**

### Secretariat's Comments

4/20/2023 MY:

Yes. The indicative expected amounts, sources and types of co-financing are documented and consistent with the requirements of the Co-Financing Policy and Guidelines.

### Agency's Comments

#### **Annex B: Endorsements**

**8.4 Has the project been endorsed by the country?s(ies) GEF OFP and has the OFP at the time of PIF submission name and position been checked against the GEF database?**

### Secretariat's Comments

4/20/2023 MY:

Yes. An OFP signed letter of endorsement dated April 12, 2023 is available in the project document folder of the GEF Portal.

### Agency's Comments

**Are the OFP endorsement letters uploaded to the GEF Portal (compiled as a single document, if applicable)?**

### Secretariat's Comments

4/20/2023 MY:

Yes. An OFP signed letter of endorsement is available in the project document folder of the GEF Portal.

#### Agency's Comments

**Do the letters follow the correct format and are the endorsed amounts consistent with the amounts included in the Portal?**

#### Secretariat's Comments

4/20/2023 MY:

Yes.

#### Agency's Comments

**8.5 For NGI projects (which may not require LoEs), has the Agency informed the OFP(s) of the project to be submitted?**

#### Secretariat's Comments

4/20/2023 MY:

N/A

#### Agency's Comments

**Annex C: Project Location**

**8.6 Is there preliminary georeferenced information and a map of the project's intended location?**

#### Secretariat's Comments

4/20/2023 MY:

Not completed at this time.

Please provide preliminary georeferenced information and a map of the project's intended location.



5/5/2023 MY:

Yes, the comment was addressed.

#### Agency's Comments

The project is located in Ningdong in the Ningxia Hui Autonomous Region, and Dalian and Shenyang in Liaoning Province, China.

Ningdong's coordinates is 38.1644° N, 106.5862° E

Dalian's coordinates is 38.9140° N, 121.6147° E

Shenyang's coordinates is 41.8048° N, 123.4330° E



**Annex D: Safeguards Screen and Rating**

**8.7 If there are safeguard screening documents or other ESS documents prepared, have these been uploaded to the GEF Portal?**

Secretariat's Comments

4/20/2023 MY:

Yes. UNIDO has uploaded a PDF document to address the safeguards screen an rating issue.

Agency's Comments

**Annex E: Rio Markers**

**8.8 Are the Rio Markers for CCM, CCA, BD and LD correctly selected, if applicable?**

Secretariat's Comments

4/20/2023 MY:

Yes. It is shown on page 40.

Agency's Comments

**Annex F: Taxonomy Worksheet**

**8.9 Is the project properly tagged with the appropriate keywords?**

Secretariat's Comments

4/20/2023 MY:

Yes. It is shown on pages 40-41.

Agency's Comments

**Annex G: NGI Relevant Annexes**

**8.10 Does the project provide sufficient detail (indicative term sheet) to take a decision on the following selection criteria: co-financing ratios, financial terms and conditions, and financial**

**additionality? If not, please provide comments. Does the project provide a detailed reflow table to assess the project capacity of generating reflows? If not, please provide comments. Is the Partner Agency eligible to administer concessional finance? If not, please provide comments.**

Secretariat's Comments

4/20/2023 MY:

N/A

Agency's Comments

## **9 GEFSEC Decision**

**9.1 Is the PIF and PPG (if requested) recommended for technical clearance?**

Secretariat's Comments

4/20/2023 MY:

Not at this time.

Please address the issues and comments in the previous boxes.

5/4/2023 MY:

Not completed.

The PM compared the PIF which was downloaded from the GEF Portal on April 12, 2023 with the PIF which was downloaded from the Portal on May 4, 2023. They are identical. Please check the Portal system from both the side of UNIDO and the GEF to make sure the revised PIF is uploaded.

Next time, while responding the GEF comments please use page numbers to indicate the places of revisions of the PIF.

5/10/2023 MY:

Please address the following comments from the [PPO](#):

1. On Environmental and Social Safeguards: UNIDO has attached the ES screening template and an overall ESS risk of the program is classified as low. During the PPG-phase, an environmental and social management plan will be prepared to screen and avoid/minimize related risks, in particular when selecting locations for the pilot projects. However, environment and social risk ratings in "Risks to Project Preparation and implementation (moderate)" (page 20), "Overall Project Risk Classification (low)" at PIF stage (page 35), and "E&S screening template" (category (B))(page 1) are different. Please make all environment and social risk ratings consistent among "Risks to Project Preparation and implementation (moderate)", "Overall Project Risk Classification (low)", and "E&S screening template" (category (B)) at PIF stage.

2. On Stakeholder Engagement: The project lists stakeholders consulted during PIF development. It also states that Civil society has been consulted. Please clarify which civil society organizations have been consulted and also further elaborate on efforts to develop a Stakeholder Engagement Plan prior to CEO Endorsement.

3. In Portal there are two executing entities: (i) International Hydrogen and Fuel Cell Association (IHFCA); and (ii) Ministry of Industry and Information Technology (MIIT). The PIF shows that only these two entities will execute the project. Nevertheless, the Letter of endorsement and Section "Coordination and Cooperation with ongoing initiatives" stipulates that the project will be executed by UNIDO. Please revise the project with two actions: (1) Change the word "Yes" into "No" for the following question:

**Coordination and Cooperation with Ongoing Initiatives and Project.**

Does the GEF Agency expect to play an execution role on this project? Yes

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

(2) In the OFP-signed endorsement letter, please change the following sentence: " If approved, the proposal will be prepared and executed by United Nations Industrial Development Organization. " into "If approved, the proposal will be prepared and executed by the International Hydrogen and Fuel Cell Association (IHFCA) and the Ministry of Industry and Information Technology (MIIT)." Then, please submit the revised OFP-signed letter with the revised PIF package.

4. Table "Sources of Funds" in Portal is broken down in two separate rows: one for the GEF Financing + associated Agency fee, another for PPG + associated Agency fee. Please present this in one single line as all resources are mapped to CC Star allocation.

#### Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
UNIDO	GET	China	Climate Change	CC STAR Allocation	17,440,000.00
UNIDO	GET	China	Climate Change	CC STAR Allocation	327,000.00
Total GEF Resources(\$)					17,767,000.00

5. Knowledge Management: An overall approach to Knowledge Management and Learning has been provided in the Project Description. Proposal includes KM&L deliverables that enable and enhance access to knowledge and information through a knowledge platform and website, international knowledge exchange, research, education, in person or virtual training meetings, seminars and conferences. While the project mentions dissemination of information for public awareness and publicity through industry organization websites, online media, TV, and social media activities, there is no reference to an overall Communication Strategy or Plan.

Please provide a brief description of a project Communications Strategy/Plan for outreach, awareness raising and dissemination of outputs/results. This description can be added to Component 4.

6. Gender: Please integrate gender considerations in Outcome 4. Please ensure gender expertise/women's representation in the Project Steering Committee.

5/16/2023 MY:

Yes, all comments were addressed. The PM recommends project technical clearance.

The Agency needs to work with the WB IT team to resolve the issue that does not allow the Agency to update the PIF in front of the GEF Portal.

Agency's Comments **Addressed. Please see the reply in the comments.**

**9.2 Additional Comments to be considered by the Agency at the time of CEO Endorsement/ Approval**

Secretariat's Comments

5/5/2023 MY:

Referring to the box of "4.2 JUSTIFICATION FOR PROJECT" , for the responses on b):

Please provide more detailed information on the current status of the tax credit and incentives, new policy development due to this project, and the expected achievement of these new policy implementation in China.

Referring to the Box of "5.4 a) Are the identified core indicators calculated using the methodology included in the corresponding Guidelines (GEF/C.54/11/Rev.01)? b) Are the project's indicative targeted contributions to GEBs (measured through core indicators)/adaptation benefits reasonable and achievable?"

During the project preparation period, the calculation of GHG mitigation must be undertaken with the guidance of GEF GHG accounting methodologies. In the CEO endorsement document, please provide strong arguments and justification on using 2% in the scenario for indirect GHG reduction calculation.

The Agency needs to work with the WB IT team to resolve the issue that does not allow the Agency to update the PIF in front of the GEF Portal.

CEO cover memo:

The objective of the project is to catalyze green hydrogen production and utilization in Ningdong, Dalian and Shenyang, China, with the ultimate goal to decarbonize and support the energy transition. The project has three components: (1) development of new policies, standards, regulations, and an information platform to promote green hydrogen integrated supply chain and demonstration application; (2) multi-field application of green hydrogen including green hydrogen production, and the use of green hydrogen for heavy duty trucks and in the industrial sector; (3) capacity building; and (4) knowledge dissemination and international cooperation and communication. The project is innovative, sustainable, and capable of scaling up, because (1) there is a gap in green hydrogen production and consumption in trucks and industry, (2) private investors are involved; and (3) China has a huge market in green hydrogen use in its transport and industry sectors. With \$16 million GEF budget, this project would mobilize \$160 million investment from both the public and the private sectors. The project aims at mitigating 181 million tons of CO<sub>2</sub> in its lifetime.

Agency's Comments Estimated direct GHG reduction is 17million tCO<sub>2</sub>. The estimated indirect GHG reduction is 130million tCO<sub>2</sub>.

**Review Dates**

**PIF Review**

**Agency Response**

<b>First Review</b>	<b>4/20/2023</b>
<b>Additional Review (as necessary)</b>	<b>5/4/2023</b>
<b>Additional Review (as necessary)</b>	<b>5/5/2023</b>
<b>Additional Review (as necessary)</b>	<b>5/10/2023</b>
<b>Additional Review (as necessary)</b>	<b>5/16/2023</b>