



China Green Hydrogen: from Production to Hard-to-Abate End Uses

Review CEO Endorsement and Make a recommendation

Basic project information

GEF ID

11271

Countries

China

Project Name

China Green Hydrogen: from Production to Hard-to-Abate End Uses

Agencies

UNIDO

Date received by PM

6/12/2024

Review completed by PM

9/24/2024

Program Manager

Remy Ruat

Focal Area

Climate Change

Project Type

PIF
CEO

Part I - General Project Information

1. a) Is the Project Information table correctly filled, including specifying adequate executing partners?

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

3. PM approves the change in title - for IT Reference to change on the portal.

RR (09/24/2024):

1. and 2. cleared.

3. Thank you for the clarifications, well understood - the proposed revised title looks well appropriate and reflective of project content - it is however not reflected on the project information table on the portal entry, could you please make the revision there as well? Thanks.

RR (06/27/2024):

1. Project tags : The Innovation box is ticked, but this is not a tag and stands for the GEF innovation window as a project modality which is not the case for this project - please untick this box.

2. Taxonomy : Remove tags pertaining to biodiversity, mainstreaming, focal areas, CBIT, integrated programs, as those aspects are not covered by this project

3. Project title : Please consider revising the title of the project to more accurately reflect the content. In particular, this is not an integrated programme project, therefore the term integrated can be removed; the term project can also be removed as it is redundant; finally, the use of green hydrogen is not only for energy purposes in this project but also for chemical feedstocks, therefore this could also be removed. The project summary refers for example to the title as "*China Green Hydrogen Project*" which would likely be a clearer and more concise title to use overall throughout the project description.

Agency Response

UNIDO Response 09/09/2024

1. **Project Tags:** Clearly understood that ?innovation? is not a tag and instead stands for a project modality, which does not apply to this project. Thank you ?innovation box unticked.

2. **Taxonomy:** (?Rio Markers?) tags/rows for Climate Change Adaptation, Biodiversity, and Land Degradation have been removed accordingly.

3. **Project title:** Thank you for these good suggestions on the title. The initial title was ?Green Hydrogen Energy Integrated Demonstration Application Project in China.? The team has discussed and decided to revise the formal title to more accurately reflect the content: **?China Green Hydrogen: from Production to Hard-to-Abate End Uses.?** We will continue to use ?China Green Hydrogen? or ?China Green Hydrogen Project? as the abbreviated name in the main text of the ProDoc. Regarding the individual points in the comment:

(1) More accurately reflecting the content: The new title reflects two important overriding features of the project which differentiate it from other projects and are key in defining the project direction: (a) First is that the project is about deployment of full value chains (from renewable energy to green hydrogen production to green hydrogen storage, transport, and use). It is not just about upstream hydrogen production or just about downstream use, but about both. The second part of the title, ?from production to hard-to-abate end uses,? we believe, conveys this full value chain concept. (b) Second is that the downstream focus is on hard-to-abate sectors.

(2) Removing the term ?integrated?: We understand the reason for the GEF Sec comment on the word ?integrated? and have removed it. We feel ?from production to hard-to-abate end uses? helps to convey the ?complete? value chain concept that was originally meant to be conveyed by the word ?integrated.? There may have been some confusion, as, in Chinese, the term can also mean ?comprehensive.? The related point that is now better reflected in the new title is that these are complete value chains with no missing links. **(3) Removing the word ?project?:** We have removed the word project from the full title, because, as pointed out by GEF Sec, it is redundant in the General Project Information Table where the title is preceded by ?Project:?. In the main text, however, we might refer to the project as ?China Green Hydrogen? or ?China Green Hydrogen Project.? **(4) Removing the word ?energy?:** It is a good point that the green hydrogen in this project is not only used for energy, but also for feed stocks (though some Chinese policies/ plans use the term ?energy? anyway in such situations). The word ?energy? has been removed from the title. **(5) Proposal to use abbreviated title for full title:** We decided not to use ?China Green Hydrogen? (the abbreviated title) for the full title of the project, as there are some other green hydrogen efforts going on in China and we wanted to convey this project?s special focus of complete value chains and hard-to-abate end uses.

UNIDO Response 10/22/2024

3. Thanks for your kind acceptance. Our UNIDO GEF team, and I cannot make this change, it would require approval or a change at your back-end in the portal. Perhaps the GEF IT team can help with this? Thanks a lot. **UNIDO** to address with the **GEF IT** team for support.

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

Secretariat comment at CEO Endorsement Request
Cleared

RR (06/27/2024):

Yes - unchanged since PIF, main objective remains CCM.

Agency Response
UNIDO Response 09/09/2024

Cleared from Review - No comment

2. Project Summary.

- a) 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 outcomes?**
b) Does the summary capture the essence of the project and is it within the max. of 250 words?

Secretariat comment at CEO Endorsement Request
Cleared

RR(11/4/2024):

The summary had been copy-pasted during the last resubmission on the portal. (first two paragraphs appeared in double). This is now addressed.

RR (09/24/2024):

Thank you for the revisions and clarifications. Cleared.

RR (06/27/2024):

The summary captures most of the essence of the project in a synthetic manner, thank you for this description. Please see comments below for improvement.

1. Reference is made in the summary from green hydrogen from renewables and other net zero methods. Please note that only green hydrogen produced from renewables through electrolysis are eligible to GEF financing. Perhaps best to delete reference to non-renewable sources in the summary as it could confuse readers on their understanding of green hydrogen as it relates to GEF programming.
2. Reference is also made to vehicles as an end use sector for application, when the project only focuses on heavy duty vehicles - please revise these wordings accordingly.
3. The summary is lacking a reference to the ultimate outcome sought by this project which is GHG emission reductions in hard-to-abate sectors - based on a revised GHG estimate (see dedicated review

comments below), please include a sentence referring to the expected impact of the project in that regards.

Agency Response

UNIDO Response 09/09/2024

1. In reference to the Chinese Government's green energy transition, we have removed "other methods" for producing green hydrogen and now focus only on renewable energy-generated hydrogen, where the sentence in question now reads: "Green hydrogen produced by renewable energy is considered a key path in a diversified energy portfolio." We had initially included other zero carbon methods, because the longer term planning work (the industrial green hydrogen roadmap that the project plans to work on) may consider not only renewable energy but also some other zero carbon methods for producing green hydrogen. Yet, the majority of the project is focused on the current situation and renewable energy as the sole viable source of energy for green hydrogen production, which fits with the focus of GEF financing referred to in the comment.

2. When we reference end uses, the project will address, we now specify "heavy-duty vehicles." Earlier in the summary, we added a "particularly" before "in hard-to-abate industrial sectors and heavy-duty vehicles," since vehicles generally can be end uses (and that statement is about the general situation, not the project in particular). We have also gone through the whole document and replaced "vehicles" or "commercial vehicles" or "FCVs" with "heavy-duty vehicles" or "heavy-duty FCVs" when it makes sense to do so. Thereby aligning project with the GEF programming instructions that the hard-to-abate transport sector considers mainly heavy-duty mobility.

3. At the end of the summary we have added a paragraph to address this comment: "Through this work, the project will contribute to the ultimate goal of GHG emission reductions, aiming to achieve 11.4 million tons in direct emission reductions, and to set the stage for larger and larger emissions reductions by creating an enabling environment for more and more green hydrogen value chains with hard-to-abate end uses to be deployed." This goal of the project was and is still also described under Project Rationale (A) under Project Description.

3. Project Description Overview

- a) **Is the project objective statement concise, clear and measurable?**
- 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?**
- c) **Are gender dimensions, knowledge management, and M&E included within the project components and budgeted for?**
- d) **Are the GEF Project Financing and Co-Financing contributions to PMC proportional?**
- e) **Is the PMC equal to or below 10% (for MSP) or 5% (for FSP)? If above, is the justification acceptable?**

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

7. Cleared.

RR (09/24/2024):

All cleared except #7.

1. Cleared. Thanks for the revisions/clarifications. The objective makes more sense, although one could point that it is now a bit long - you may wish during implementation to summarize this objective into a shorter version.
2. Cleared from logframe perspective. Thanks for the clarification. Follow up provided in description section.
3. Cleared. Thank you for the restructuring work on the number of outputs, and for the efforts in clarity in proposed transformation pathways, which makes the connection with the project theory of change easier and will facilitate M&E as well.
4. Cleared. Thank you for the explanation - this is indeed more of a community of practice than an employment forum then - useful clarification as similar communities of practices are established across prospective green H2 projects financed by the GEF.
5. Cleared. Thank you for this exploration of synergies with the GEF green h2 program - this will add a great deal of value to its global impact potential. In terms of collaboration on the Global Green Hydrogen Review, this is understood as materials from the global platform being used as inputs for this review conducted by Chinese stakeholders - otherwise, if it is the other way around, this would amount to a budgetary overlap with impacts on the cost-effectiveness structure of the global platform.
6. Cleared. Thank you for the effort in reflecting the project's gender approach throughout the logframe.
7. Perhaps this is a portal glitch when entering data upon resubmission, but the PMC justification still appears as a copy-paste of the project summary for now on the portal view of the CEO ER. Thank you for revising (simple deletion would suffice, but feel free to insert the justification you provided below if preferred).

RR (06/27/2024):

1. Project objective : please see comment above on project title regarding the use of the word integrated which is not suitable here to describe the project objective. Removing this term would be more suitable and would also help to make the objective statement clearer and more concise. Similarly, please also see comments on project summary regarding terminology for vehicles, as only heavy duty vehicles are to be targeted by this project and as by definition any GEF intervention in green hydrogen has to be on hard to abate sectors. Therefore this part of the objective would be better reflective of project if formulated as a focus on hard to abate industrial and heavy duty transportation sectors. Finally, the separation of project objective in two sentences makes it unclear as to what is the

priority target and whether there are actually multiple objectives - would be more appropriate to liaise both legs by replacing the dot with a connection such as : "(...), by promoting policy, strategic planning, (...)".

2. Outcome 1 is clear - however in outputs, taking example of 1.2, there is a mismatch between what is proposed in the logframe, which is consistent with GEF-8 programming directions and project TOC, and what is proposed in the pilots descriptions, where the incentives target the entirety of the hydrogen value chain applied to FCVs, not only green hydrogen ones.

3. Please see comments below relating to the outputs :

- the amount of outputs per components is too large (16 for component 1) and their content too detailed (going at the level of activities), making the logframe less clear and manageable/measurable. Please consider merging some that are consistent (some suggestions provided below), and saving some details for the component activities descriptions.

- Throughout the outputs in logframe, useful if they can relate more to the objectives of the project - for example output 1.3 on H2 safety system, how this relates to the performance, acceptability and efficiency/effectiveness of green technologies and therefore likelihood of uptake, which is the ultimate target for the corresponding outcome in the logframe.

- Output 1.6 seems redundant with output 1.3 (relating to safety), please consider merging for better consistency and readability. The same comment can be made for output 1.7 with output 1.5 (relating to standards), and also between output 1.8 and 1.2 (planning/policy support), as well as between 1.9, 1.10 and 1.11 (relating to KM), 1.12, 1.13 and 1.14 (relating to replication/upscaling strategy) and 1.15/1.16 (relating to business models).

- outputs related to outcome 2 on demonstrations and innovation : please take into account comments made below on project description in connection with the content of these pilots when revising the titles of these outputs. Some wording should for example be adjusted - commercial vehicles are understood in any other country as personal vehicles for private use, when in China and in the context of this project, they are understood as heavy duty vehicles - a disclaimer should be introduced early on in the project document to clarify this ; see also comments on the use of the word "integrated" which seems out of place here ; further, the term coal chemicals industry is not really befitting the targetted sector in terms of green hydrogen use which is rather the sector of chemical feedstocks (or more simply, chemicals) - coal is just used as an input to prepare ammonia, methanol and petrochemicals in these pilots similarly to hydrogen and in the same way oil would have been used were it available on site - therefore the sector of focus should be identified as chemicals, not coal chemicals, as this is the effective target of use of green hydrogen in this project, along with heavy duty vehicles.

4. For component 3, it is unclear who would be the public of output 3.3. Also, output 3.5 seems in other words to be a job/career fair connecting students with prospective employers in green h2 industry - is this understanding correct? If so, perhaps a clearer and simpler wording is possible.

5. Component 4 on knowledge management would be the appropriate location to ensure linkages and synergies with the Green Hydrogen global program financed under GEF-8, which is mentioned in the section dedicated to coordination with other initiatives but then not mentioned throughout the project design. Please integrate in the outputs and activities of this components how this linkage can work, such as by allocating part of the component budget to participate in knowledge sharing activities of the global platform, and using this forum to share the model experienced in China to other countries participating in the program. Currently the KM outputs proposed by the project include references to global facing deliverables ? conferences, knowledge products (annual global green hydrogen development reviews), information and international exchanges on green hydrogen, which are not China specific - which would be by itself a duplication of the global engagement that should be taken on by the global platform for the generation of global level outputs, which are not in the scope of this China-specific project.

6. Gender is absent from the logical framework, although the project documents clarify that the recruitment of a specialist has been budgeted for to operationalize the mainstreamed approach to gender in project implementation. Please reflect this throughout relevant components and corresponding budget lines in the logframe. Per GEF Policy, gender considerations should be mainstreamed throughout the project. For example, this entails the following initial considerations which the specialist can then build upon:

- i) Ensuring policies are gender responsive, integrating the differentiated gender barriers and considerations that have been identified in the GAP (e.g., Outputs 1.2, 1.6, 1.8, 1.15, 1.16).
- ii) Fostering active and meaningful participation of women and women's organizations during decision-making processes, as well as in trainings and capacity building (e.g., Outputs 2.1, 3.1, 3.2, 3.3).
- iii) Seeking for the project to address the financial constraints and barriers that women entrepreneurs may face in this industry (e.g., Outputs 1.16, 2.4).
- iv) Identifying support and education/employment plans for female graduates for the hydrogen sector (e.g., Outputs 3.4, 3.5).
- v) KM captures and disseminates good practices and lessons learned from a gender perspective (e.g., Outputs 3.1, 4.2, 4.3, 4.5, 4.6). Under M&E, ensure that gender dimensions are monitored and reported on, and that the GAP is developed in accordance with the project framework and the GAP and Gender Expert are budgeted.

7. Justification : the justification provided below the PMC/co-financing table is a repetition of the project summary. please remove and replace by any justification as applicable to the repartition proposed between GEF project financing and co-financing contributions to components and PMC. As the repartition is already proportional and as the PMC is below 5%, little to no justification would effectively be expected here unless project proponent wishes to clarify which co-financiers will contribute to PMC costs.

Agency Response

UNIDO Response 09/09/2024

1. Project objective:

-We have removed "and integrated" so that the objective now simply refers to "comprehensive green hydrogen industrial value chains."

-We now refer to "heavy-duty transport" and "hard-to-abate industrial" sectors as providing demand-pull for green hydrogen. A note is that the design had originally referred to two sectors "hard-to-abate industrial" and "heavy-duty vehicles." We understand the GEF Secretariat's point that heavy-duty transport is one of main mobility "hard-to-abate sectors." The revisions now read: "with demand pull from hard-to-abate sectors (heavy-duty transport and hard-to-abate fields)."

-The original version of the objective was one sentence, which may have later been separated in the internal review process. We have reverted to the original with just one sentence and this segment reading: "with stimulus and support across the value chain from policy, strategic planning, standards?" Thus "from" is reintroduced as the connector.

2. Outcome 1- Outputs in Logframe aligned:

It is a good point that outputs of Outcome 1, particularly in cases related to FCVs, may support the entirety of the hydrogen value chain, not just green hydrogen aspects. During barrier analysis for the green hydrogen value chain, it was realized there is a need to address the chain systematically from many different leverage points. The analysis recognized the need to create demand pull for green hydrogen and that this "pull" may need to include incentives, such as for FCVs, that would not be specific to green hydrogen. The team did discuss an approach sometimes pursued in China, "reward after" instead of "subsidize before," which might require green hydrogen use for vehicle owners that receive incentives. Yet, in the project's three demo cities, where the FCV markets are nascent, the "reward after" approach is deemed by experts to be premature and not able to stimulate the market at this point. That is, it is a great challenge to stimulate purchase of FCVs by those unfamiliar with them. To require in advance that potential purchasers also commit to using exclusively green hydrogen would be expected to depress interest. Thus, the best strategy was determined to be to combine general incentives for FCVs in the demo cities with concurrent incentives for the use of green hydrogen that would ultimately reduce the cost to below that of grey hydrogen. At the same time, contracts signed with companies participating in the project demos will require that green hydrogen be used. And, follow-up assessments will confirm compliance.

For those items that, in the previous draft, may have been seen to promote hydrogen more generally, they are revised, when viable, to support green hydrogen or, as second choice, to emphasize green hydrogen.

[**Note:** Merging of outputs recommended by a later GEF Sec comment has resulted in some of the specific content responding to this comment being lost to the Project Description Overview, but revisions are maintained in the sub-outputs and/or detailed activity descriptions found later in the ProDoc.]

3 Comments relating to the outputs:

3a. No. of Outputs/Components

The number of outputs for Component 1, as pointed out in the comment, was originally 16. Component 1 is a TA component; the proponents envision many needs associated with the component. That is why the team initially decided to have so many outputs: The volume of TA work and the volume of targeted results is significantly larger than that of typical GEF project TA components. Yet, we also understand how this makes the logframe less clear.

The outputs/ activities section was originally organized by some big topic areas (about 8). We have now divided the component into 8 outputs corresponding to the 8 topics which, briefly, are:

(1) green hydrogen planning, (2) policy, (3) carbon trading, (4) standards,

(5) industrial sector plans, policy, regulations, (6) information and data products, (7) replication, and (8) business model and innovation development. We have also shortened the output statements that were excessively long. These turned out to be some of the ones that were merged; and the new merged output statements are much shorter. At the same time, we note that other GEF Sec comments ask us to indicate in the output statements how the respective outputs support green hydrogen/ the project objective, gender mainstreaming, or involvement with the GEF Green Hydrogen global program. Thus, in some cases, we added some text to output statements to address these other comments. Thus, while the overall length of the output listing is much reduced for Outcome 1, the output statements still include some elaboration.

3b. Outputs in log frame (1.3):

For those outputs for which the connection with the project objective or respective outcome is less obvious, we have added text to the end of the output to explain. For example, to the newly merged ?policy output? (under Outcome 1) we have added at the end, ?stimulating greater supply of and demand for green hydrogen via incentives, cost reduction, and confidence-building.? To the newly merged ?standards output? (also under Outcome 1) we have added at the end, ?increasing confidence in and development pace of the green hydrogen economy.? To the newly merged information and data products output (Outcome 1), we have added at the end, ?becoming materials that can increase confidence, know-how, and momentum for the green hydrogen economy in China and abroad.? And, to the newly merged business model/ innovation output (Outcome 1), we have added at the end, ?supporting viability and growth of the industrial chain.?

3c. Output 1.6-1.16 merged/reduced

As described two comments above (response to Project Description Overview 3a), we have merged several outputs under Outcome 1 according to the original topical organization of the design. Much of this merging fits exactly with the recommendations of the comment:

(a) 1.9, 1.10, and 1.11 about KM have been merged now as 1.6,

(b) 1.12, 1.13, and 1.14 related to replication have been merged now as 1.7, and

(c) 1.15 and 1.16 relating to business models have been merged now as 1.8.

What we've done a little differently is to merge the two policy outputs 1.2 and 1.3 (now as 1.2) and the three standards outputs 1.5, 1.6, and 1.7 (now as 1.4). Although 1.3 and 1.6 both cover safety aspects, proponents in China see the work involved as quite different, 1.3 within the policy area (such as the current classification of hydrogen as a chemical rather than fuel, which results in more stringent siting requirements for green hydrogen production and HRSs thus raising costs) and 1.6 in the standards area. As for 1.8 and 1.2, we have kept these separate (and, as mentioned 1.2 merged with 1.3 under policy), as 1.2 is focused on new incentive policies (and now a part of the merged 1.2). For the green hydrogen industrial chain whereas 1.8 (now 1.5) focuses on outreach to specific hard-to-abate industrial sectors to aim to convince policy makers to incorporate green hydrogen into their existing plans, policies, and regulations. Another GEF Sec comment elsewhere notes there is a need for the project to give greater attention to the hard-to-abate industrial sectors as compared to heavy-duty vehicles. This output (the original 1.8, now 1.5), which focuses on the industrial sectors only, is seen as important as a stand-alone output to give those sectors their due. (The original wording may have not made it clear to the GEFSec that this output was to be focused on the industrial sectors only, but specification of "industrial" has been added to clarify.)

3d. Outputs related to outcome 2 on demonstrations and innovation:

The suggestions of this comment regarding the outputs of Outcome 2 have all been adopted as follows:

-Heavy duty vehicles: Based on the other GEFSec comment about the "commercial vehicle" terminology, we have decided to go ahead and use "heavy duty vehicles" in all relevant places in the document, rather than use a disclaimer. We did originally use a literal translation for "commercial vehicles," meaning, in China, those used for business purposes rather than personal use. As the project does focus on large commercial use vehicles and heavy-duty vehicles are generally used for business purposes, it does seem most appropriate to shift to using the internally accepted term of "heavy duty vehicles," in all cases and thus be fully in line with the project focus on "hard-to-abate" end uses.

-Integrated: The term used in Chinese also means "comprehensive" and was used to convey that full green hydrogen value chains will be deployed. We have deleted the term "integrated" and shifted to terms like "full," "complete" or "comprehensive" when needed.

-Coal chemicals: We have adjusted all references to "coal chemicals" to "chemicals" per the GEFSec explanation, that coal is just another feedstock.

4. Component 3:

The attendees at the focused problem solving meetings of Output 3.3 are not the general public but instead stakeholders with knowledge of and significant role in the green hydrogen industrial chain. To

clarify, we have added the following to the output: "...of experts, business persons, and policy makers involved in the green hydrogen industrial chain"?

The first part of Output 3.5 has been revised to read: "Green hydrogen industrial chain platform established for connecting both experienced and emerging technical talent to companies and projects and for connecting organizations to each other..?" This platform is not specific to students and not specific to employment. It may connect experienced experts with projects and it may also connect organizations with each other (maybe one organization has a lab another organization wants to use or one organization has a technology it wants another organization to test). These details are explained in the activities, but it would be too cumbersome to lay out here. We hope the revisions clarify that is not just a "job platform" for students, but instead: (i) addresses a range of experts, (ii) might be project-oriented rather than job oriented, and (iii) connects organizations to each other.

5. Component 4 on Knowledge Management:

Efforts have now been made to include the GEF-8 Green Hydrogen global platform partners in certain aspects of the project output and activity descriptions:

-In Output 3.1 (conferences), GEF-8 Green Hydrogen global program partners are among those mentioned for capacity building. In the detailed activities of the output, the global program partners are mentioned as attendees at three of the conferences (the one introducing demo results, the one introducing international experience, and the final one summing up results).

-Activity 3.2.2, with focuses on holding project side events at international meetings/ conferences, now includes attendance and holding of side events at meetings of the GEF Green Hydrogen global program.[\[TAT1\]](#)

-In Output 4.1 (dissemination of data and info products prepared under Outcome 1), these global program partners are among those mentioned as priority targets for dissemination. Both of the activities under this output now mention the partners as well.

-In Output 4.2 (social media and external media), specialized group outreach in the output wording is now designated to include the GEF Green Hydrogen global program partners. Two of the activities of the output now also mention those partners.

-In Output 4.3 on international exchange, the GEF Green Hydrogen global program is mentioned as a source of potential connections for cooperation with Chinese entities. The output's activity also mentions how the project will facilitate cooperation between Chinese organizations and entities in GEF Green Hydrogen global program countries that are actively pursuing green hydrogen demonstrations.

-In Output 4.5, the GEF Green Hydrogen global program is now mentioned as something that will be leveraged in the information exchange platform of the website. That is, it is envisioned that participants from countries under the program will participate in the discussion board. This is also mentioned in the relevant activity of the output.

-As for the Global Green Hydrogen Review, while this was originally an output of its own under Component 1, it is now a sub-output (Output 1.6c), so is not included in the Project Description Overview table at the beginning of the ProDoc. In this sub-output (found in the detailed activity description section of the ProDoc), we have now included references to the GEF Green Hydrogen global program. It is now indicated, both in the sub-output wording and in the wording of its three associated activities, that the China project will cooperate in preparation of the Review with the GEF Green Hydrogen global program.

-The budgets allocated to the outputs and activities indicated above will now provide coverage of linkages with the GEF Green Hydrogen global program (e.g. dissemination, social media work, attending and presenting at program meetings, etc.), though the specific allocations from each activity will be determined during implementation (as each activity with linkages to the global program also has other content).

-Some of the above revisions also address the comment that international content should be handled by the global program and not the China project. Now, the content in the activity descriptions is more nuanced, such as with the indication that the global program will cooperate with the China project on the Global Green Hydrogen Review.

6. Gender absence from the logical framework:

Prior to revisions in response to this comment, there were already at least nine project activities referring to gender action of the project. These are Activities 3.1.1, 3.2.1, 3.2.2, 3.3.1, 3.4.1, 3.5.1, 4.2.1, 4.2.3, and 4.5.1. Some of these activities already targeted a certain participation rate of women, such as in conference attendance or as experts or emerging talent in the talent database, while others indicated that materials (such as textbooks, social media posts, and videos) should be designed to appeal to women.

In line with the suggestions of this comment, the following revisions have been made:

(i) Output 1.2 indicates policies will be gender responsive, as do sub-output 1.2a on incentive policies and sub-output 1.2b on safety policies. Relevant assessment and policy drafting activities under the sub-outputs indicate: ?Assessment should consider differentiated barriers faced by women in participating in the green hydrogen value chain and include gender responsive aspects to the proposed policies.? Output 1.4 indicates standards will be gender responsive as do two of its sub-outputs 1.4b (safety standards) and 1.4c (product standards). Assessment and design activities under these sub-outputs call for consideration of differentiated barriers faced by women and gender responsive aspects to the respective standards. Output 1.5, focused on incorporating green hydrogen value chain aspects into industrial sector plans, policies, and regulations now indicates additions should be gender responsive; and the activity under this output elaborates that assessment should consider differentiated barriers women face. Output 1.8, focused on business plans, innovation, and entrepreneurship now includes gender responsive considerations as do its two sub-outputs. Activities under it mention differentiated barriers women face, such as access to financing, and incorporating gender responsive aspects.

(ii) Meaningful participation of women has been incorporated into Outputs 3.1, 3.2, and 3.3 and into associated activities with reference to women speakers and/or women's organizations when relevant.

(iii) Barriers that women entrepreneurs face has been incorporated into Output 1.8 (into which the former Output 1.16 has been merged) and Output 2.4, as well as associated activities.

(iv) Output 3.4 has incorporated attention to promoting these [materials] to women students. The activities associated with this output already had elaboration of this point incorporated into their design. Special attention to female candidates has been incorporated into Output 3.5; and the text regarding women in the associated activity has been expanded to include special efforts to encourage women to be involved in the green hydrogen industrial chain.

(v) In terms of KM-like activities, the dissemination or utilization of best practices or lessons learned from the gender dimension has been incorporated into Outputs 3.1, 4.2, 4.3, 4.5, and 4.6, as well as relevant activities under them.

-The two M&E outputs and their associated activities, as relevant, now include emphasis on assessing the gender dimension.

-A Communications and Gender Specialist is listed among the staff of the PMU, a role that will combine communications and gender work. As such, this position will be funded by project management and Component 3 and Component 4 funds. As the specialist will play a leading role in those two components, funding of this expert will, in turn, ensure funding of the Gender Action Plan, for which this expert will be responsible.

7. Justification on PMC/co-financing table:

The repeat of the project summary has been deleted. A table showing the repartition of GEF funds and co-financing among the project outcomes, M&E, and PMC as compared to the PIF stage is provided with explanation. The most significant changes is that the very large co-financing of the INV demo outcome (Outcome 2) has been reduced somewhat (though is still 11.5x GEF financing) and shifted to TA Outcomes 1, 3, and 4, so that each has co-financing that is 7x GEF co-financing. The M&E GEF funding has been increased from USD210,000 to USD400,000 with the extra USD190,000 shifted from the TA of Outcome 1. PMC co-financing has been reduced a bit.

UNIDO Response 10/22/2024

7. The repeat of the project summary has been deleted.

4. Project Outline

A. Project Rationale

a) Is the current situation (including global environmental problems, key drivers of environmental

degradation, climate vulnerability) clearly and adequately described from a systems perspective and adequately addressed by the project design?

b) Have the role of stakeholders, incl. the private sector and local actors in the system been described and how they will contribute to GEBs and/or adaptation benefits and other project outcomes? Is the private sector seen mainly as a stakeholder or as financier?

c) If this is an NGI project, is there a description of how the project and its financial structure are addressing financial barriers?

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

1. Noted, thank you for the background.

RR (09/24/2024):

All cleared except #1.

1. Thank you for the welcome clarifications. You mention in your revisions that "As the main electricity grid in China reaches limits as to how much renewable energy-based power production it will accept, the envisioned increase in isolated grid renewable energy power production to produce green hydrogen will be beneficial to the continued uptake of renewable energy-based power in China". This seems however contradictory with the data provided in response to comment 2 below, where the share of renewables in the power mix is projected to radically increase several factors above its current value towards a domination in the mix - how then can it be considered that limits are reached in terms of renewables? Please clarify as this affects the project rationale (please also connect the data provided with government targets as much as possible for optimal clarity).

2. Cleared. Thank you for the useful data. The gap between the 2023 green hydrogen volume/share and the 2030 estimate seems very high/optimistic indeed. Noted that this does not reflect an explicit government target at this stage but that the project would aim to help make this pathway realizable. Please ensure that this issue is well reported on during project implementation given its importance in the project theory of change.

3. Cleared. Thank you for reporting on this issue at TE stage.

4. Cleared. Thank you for this very useful information which is an integral part of the project rationale for working in the identified segments. The proposed addition of tracking end-uses sectoral trends during implementation will also generate valuable data (which would be useful to exchange with the GEF green hydrogen global programme as well).

5. Cleared. Thank you for the clarification effort, this is appreciated. The problem statement is clearer which reinforces the rationale for this investment (including in relation with item 6 below).

6. Cleared. Thank you for the explanation provided, which is consistent with the rationale previously identified for the monitoring/tracking approach of this project. Follow up comments in the co-financing section.

7. Cleared. Thanks for the useful addition which connects well with elements of the project logframe.

RR (6/27/2024):

a) the current situation in China is well described, including in terms of costing trends comparing grey and green hydrogen in the country. Very clear technological barriers assessment and description of the lack of data in existing green h2 full chain demos that the project seeks to address with its monitoring outputs. Challenges about initial initiatives for green hydrogen in the country and in identifying clearly what counts as green hydrogen production based on grid connection modalities are also well outlined and justify an important share of the technical work presented later in the project description.

There are a few systemic considerations and vocabulary revisions to be considered :

1. The term "commercial vehicles" is commonly used to depict private/personnal vehicles, while the term "heavy duty vehicles" is used for larger types of vehicles. It seems to be the opposite here throughout the project document, probably due to a word-to-word translation from local terms. It would be useful to bear this in mind when engaging in international knowledge sharing activities with other countries in the context of this project to avoid confusion about what segment of the transport sector is considered hard-to-abate and suitable for green hydrogen. Introducing more explicit references to heavy duty vehicles would be welcome throughout the project documents, with perhaps also a disclaimer in the first instances of this CEO ER Prodoc to clarify the scope considered by this project which is not on fuel cell vehicles in general but on heavy duty FCVs in particular. For example, the rationale explains how fuel cell vehicles are considered among chinese stakeholders as an attractive alternative to absorb intermittency from renewable production, but this seems confusing as electric vehicles are also able to absorb this intermittency for the private/personnal segment of the transport industry - systematically precisating that the reference here is application of FCVs for hard to abate segments is essential to avoid confusion.

2. Two key systemic trends critical for project rationale are missing and would be welcome to be added here: first, trends about the China energy mix in electric power production and its expected evolution per China's energy and climate planning/targets. Second, trends about the China energy mix in hydrogen production and its expected evolution per China's planning/targets if any, and if not available, per expert judgement of project proponents considering past and ongoing trends in the sector (initial estimates were mentioned at PIF stage that green hydrogen represents currently 1% of total hydrogen production in the country, a share bound to slightly increase). Elaboration on these trends would be critical to assess how the project may impact or be impacted by these trends both on the production side (ability to raise the share of green hydrogen in the long term) and consumption side (risks of carbon rebound or leakage effects if incentivized consumption is not met by increased green hydrogen production and results in an increase of grey hydrogen use and therefore GHG emissions. This will in turn be useful to inform the GHG calculation (see dedicated review

section below). These elements should then in turn also be reflected in the paragraph of the project rationale dealing with "systems approach and overall justification of the project", as well as the paragraph dealing with potential for long lasting impacts (noting that while noted in the prodoc as a separate paragraph by the agency, the systemic approach should in principle be apparent throughout the project rationale and description).

3. In relation with hydrogen transport : Safety concerns from industry stakeholders and users are described with consistency justifying the emphasis of some project activities on this later in the description with a view to ensure uptake and long term durability. However when considering options for hydrogen pipelines, potential impacts of these types of linear infrastructures (in particular in term of footprint) would be relevant to identify if any.

4. It is very useful to see the description of the main application of hydrogen in the chinese industry, focused on ammonia, methanol and other petrochemicals, and then on FCVs, which explain the choice of these segments as application case studies prioritized for the project. Could you please add numbers to these trends, in particular the share of hydrogen in the industry used for these outputs (global trends from IEA reports indicate 60% and 30% use respectively for ammonia and methanol). Also, it would be useful to clarify the end use applications for these products, and the sectors where they are used, in order to identify the role that abatement strategies have in broader sectoral decarbonization scenarios - such as, fertilizers for ammonia (relevant to agricultural sector), plastics/textiles for petrochemicals (relevant to food, beverage, health, fashion and other sectors), other industries for chemical feedstocks, etc. Here as well, having data on trends would be useful, and if not available, it would be highly relevant to add this in the scope of elements that the knowledge component of this project would look into as a way to maximize the understanding of the levers of systemic transformation that can be activated through action on green hydrogen - this is also useful for the proponents to keep track of the most efficient end-use of green hydrogen in hard-to-abate sectors as part of national decarbonization pathways. These elements should be reflected in the paragraph of the project rationale dealing with "systems approach and overall justification of the project" as this is what would be meant by systemic implications, not only the consideration of barriers which is what the currently proposed paragraph summarizes.

5. Exhibit 1 outlining the barriers and obstacles needs revisions for the sections dealing with Policy, Planning, Regulatory, and Standards, Industry Development, Financing, Information, Capacity and Awareness. Namely, unlike the previous sections of the exhibits which do points to problems and barriers, these ones simply repeat project outputs preceded by "lack-off", which is a self-justifying statement starting from the proposed action and searching for problems corresponding to it, when the theory of change should start by describing the problem before identifying the appropriate solution. Please remove the first part of all of these sentences starting with "Lack of", following the example enclosed - "Lack of technical and business knowledge related to various aspects of the green hydrogen industrial chain results in shortage of personnel with capabilities to carry out green hydrogen industrial chain projects" becomes "there is a shortage of personel with capabilities to carry out green hydrogen industrial chain projects" - then based on this the other sections of the project description will clarify how to address this issue, including by working on developing technical and business knowledge of the value chain (but there are other activities relevant to this barrier, such as

those pertaining to connecting the education ecosystem with the industry, mentioned in several instances of the description).

6. Exhibit 2 outlines baseline projects in the country, which is useful along with the explanation of why these are still lacking data on performance likely to inform the structuring of a robust green hydrogen value chain in the country. Taking a look at the proposed pilot cities mentioned later in the prodoc, local press articles point to the potential preexistence of green hydrogen projects in NingDong beyond those mentioned in the demo concept (which also per annex descriptions seem to be already ongoing), raising questions about the additionality of the proposed GEF financing there (for example in the indicative link enclosed <https://www.chinadailyhk.com/hk/article/352394>). It would be useful to elaborate on this in this part of the project document, as well as on any other preexisting green hydrogen initiatives in targeted locations of the project. The section below the exhibit adds that work has already started for most of the facilities, which begs the question of why GEF financing for these capital expenditures is needed (although from a qualitative standpoint the case is well made regarding how the engagement of GEF project proponents seemed to have spurred an impulse to move along with some of these pre-existing concepts). Please consider this as well in the revisions made to co-financing as mentioned in the dedicated review comments on this issue below.

7. Exhibit 3 showcases baseline initiatives financed by the GEF or implemented by UNIDO on green hydrogen along with their main contents. It would be useful to clarify on this basis what are the lessons learned from these projects as relevant to the current proposals and how these are taken into account in the design of the China green hydrogen project.

b) Role of private sector and local municipalities and industrial parks is well outlined.

c) N/A.

Agency Response

UNIDO Response 09/09/2024

1. The term "commercial vehicles" vs. "Heavy-duty Vehicles" clarified:

As discussed in the response to comment #12 (3d in GEF Portal) above, all references to 'commercial vehicles' have been replaced consistently with 'heavy duty vehicles.' Further, when relevant/appropriate, references to 'vehicles' have been modified to read more specifically as 'heavy duty vehicles.'

Early on, both the project objective and summary now specifically refer to the end use scope of the project as focused on heavy-duty vehicles and hard-to-abate industrial sectors.

Regarding the point on green hydrogen and grid intermittency, the point in the text is intended to have a different meaning than is conveyed in the comment. Thus, the comment has made us realize the need

for clarification, which we have now undertaken. The text now indicates the benefit is from the isolated grid renewable energy based power production of green hydrogen and the footnote explains:

?Green hydrogen production most ideally makes use of power generated by off-grid/ isolated grid renewable energy power production. This ensures the hydrogen is truly ?green.? As the main electricity grid in China reaches limits as to how much renewable energy-based power production it will accept, the envisioned increase in isolated grid renewable energy power production to produce green hydrogen will be beneficial to the continued uptake of renewable energy-based power in China and thus the continued technological and cost reducing progress of renewable energy power production.?

UNIDO Response 10/22/2024

1. Further Clarity: Thank you for this point about the contradictory nature of our comment on the limit to the Chinese grid?s uptake of renewable energy and the projections we later give for massive increases in the share of renewables, especially intermittent renewables, in China?s electricity production.

While the projections may be viable, during PPG fieldwork, we found that investors were not being granted PPAs for off-grid intermittent renewable energy systems they wanted to develop. While China's RE share is expected to grow significantly as grid improvements are implemented, the immediate opportunity lies in using off grid renewable energy production for green hydrogen, mitigating current limitations while supporting future integration into the grid. This approach ensures that RE can be efficiently utilized without waiting for grid constraints to be resolved, and leveraging hydrogen to balance the energy system.

Additionally, China?s National Energy Administration (NEA) has implemented significant reforms to resolve renewable energy connectivity, which are prioritizing the grid integration of renewable sources, like wind and solar. These policies aim to foster market-driven mechanisms for renewable energy use and encourage cross-provincial power trading, helping to create an energy system more capable of absorbing the growing share of renewables. China's broader energy plans focus on expanding the role of renewables while addressing existing grid limitations through ongoing policy adjustments and infrastructure improvements (NEA).

In summary, the text has been modified to reflect the real situation with greater nuance. It?s not that the grid will not be increasing its share of renewable energy, but that the pace of increase is not keeping up with the willingness of developers to develop new grid-connected RE power systems. The sentence in the text that has raised the ?limits? to what the grid will accept and the corresponding footnote has been modified. At the end of the relevant paragraph, an additional explanation has been added, including a reference to the later exhibit on the growth of the share of renewable energy-based power generation in China?s grid.

The added text is as follows:

As indicated in Exhibit 1, the share of renewables in China's total power generation and the share of intermittent renewables (wind and solar) are both expected to rise dramatically between now and 2060. On a practical level, however, PPG findings suggest China's grid is not accepting as much renewable energy-based power generation as investors are willing to develop. Thus, isolated grid green hydrogen production will provide another outlet for renewable energy deployment, offering a means of gaining additional experience in developing the sector beyond what would be possible with grid-connected systems alone.

2. Inclusion of key systemic trends in project rationale:

-We have added a table (Exhibit 1) within the renewable energy subsection of Project Rationale's section of "Key elements of the system (baseline situation and trends)", along with some explanation. The table shows rapidly increasing total power generation capacity to date and forecasts out to 2060 and increasing share of renewables and of wind and PV within the share of renewables. The conclusion is that these strong trends in growth of renewable energy suggest continued technological improvements and cost reductions will be achieved and thus address one of the key bottlenecks of green hydrogen production, renewable energy cost.

-We have added a table (Exhibit 2) within the green hydrogen subsection of Project Rationale's section of "Key elements of the system (baseline situation and trends)", along with some explanation. The table shows the rapid growth of China's grey hydrogen production over the past 20 years. It also shows that, while green hydrogen production has shown even faster growth, it is still less than 1% of production. Forecasts shown, however, predict a very rapid rise in green hydrogen production with concomitant reduction in grey hydrogen production. These are certainly optimistic, but reflect the seriousness with which the government and industry players are taking China's 2060 net zero target.

-Text as also been added to the two sub-sections "systems approach and overall justification of the project" and "potential for long lasting impacts" to reiterate the above-discussed trends and their implications for successful barrier removal of the project without having the negative impact of increasing demand for grey hydrogen. On the one hand, the Green Hydrogen Project interventions are needed to make the forecast trends realizable. On the other, the strong government and industry attention to net zero that the forecasts reflect mean that there is a clear pathway/ strong potential to continuously decrease grey hydrogen production and thus avoid any problem of the project stimulating increased demand for grey hydrogen.

3. Hydrogen transport/Safety:

-Text and a footnote have been added to the "storage and transport" sub-section to list some of the safety and environmental risks of hydrogen pipelines.

-Activity 1.4c.2, which is a product standard activity, already included (in the prior draft) as its item (d), the development of standards related to hydrogen pipelines. With further investigation, we have now added a footnote to the item (d), which includes three standards China has identified that are

specific to hydrogen pipelines and that are needed. The project may support the development of one or more of these standards if needed and if deemed a priority via assessments during implementation.

4. Hydrogen Sectorial consumption data included:

The text now includes estimates of the breakdown of hydrogen consumption in China. While sources vary with regard to the exact breakdown, ammonia, methanol, and other petroleum refining predominate among sectors/ sub-sectors consuming hydrogen and account for the vast majority of hydrogen consumed in China today. Transport at present is a very small share of China's hydrogen consumption but expected to grow, which has high potential for carbon footprint reduction if green hydrogen is used. It is difficult to locate comprehensive trend information (past data and future forecasts) on the breakdown of end use consumption of hydrogen in China as, after all, there are pretty big gaps in what different sources propose is going on even at present (e.g. 2022 or 2023). Yet, the entry/ substantial increase in consumption and share of new sectors, such as transport, will probably be the most significant trend going forward. As for ultimate end uses of the ammonia, methanol, and other petroleum refining, there is also not much data on the breakdown. Sources do list the sectors that are relevant and, based on the breakdown of the first end uses of ammonia, methanol, petroleum refining and second end uses (e.g. formaldehyde is the top use of methanol), some conclusions may be drawn. So, some ultimate end use sectors are also now preliminarily listed in the text.

Given that ultimate end uses are not well understood in terms of share of hydrogen represented and there is even discrepancy in the reporting on share of first end uses, per the GEF Sec recommendation, an assessment on this topic for the "info and data" output of Outcome 1 has been added to Activity 1.6b.2. Activity 1.6b.2 focuses on industrial hard-to-abate sectors (as first level end use), though the assessment will also look at the next level - ultimate end uses - which may include non-industrial sectors. This assessment, along with the other knowledge products under Output 1.6, will be disseminated under Outcome 4.

Lastly, a paragraph has been added in the "systems approach" section regarding assessment of the top end uses and the ultimate end uses of hydrogen and how the project will gather information on these that, in turn, might be used to leverage the ultimate end use sectors of interest in creating demand pull for the use of green hydrogen.

5. Exhibit 1 Barriers and Obstacle revised:

The last five sections of this table (now Exhibit 3) have been revised according to the suggestion. The "Lack of" which began most of the bullets in these sections, has been removed in favor of leaving just the problem resulting from the "lack of". In some cases, there is a challenge in removing all links to the potential solution. For example, "high costs" is a barrier that we believe cuts across costs/economics, policy/ planning, and industry development. The more focused angle of the broader high costs barrier that is in the category of policy barriers is indeed an absence of enough policy support to bring costs down enough to make the technology viable. Once one begins to identify policy barriers, there may be some challenge not referring at all to the potential solution as policy barriers are indeed usually either problematic policy or lack of supporting policy. In such cases, we aimed to choose a happy medium and not be too specific, as with "lack of incentive policies," which

the comment refers to. The more general approach we use in this case is: ?High costs along the green hydrogen value chain, without sufficient policy support to lower costs, limit development of the industry.? We were able to revise most of the items in Exhibit 3, however, without referring to the potential solution as much as this one example does.

6. Exhibit 2: Baseline Projects:

The local press article for which the GEF Sec has provided a link discusses two projects in Ningdong. One is a 500 MW grid connected PV installation that was put into operation in late June 2023. While sometimes presented as part of the Ningdong Green Hydrogen Project demo (because it is carried out by the same company that will produce green hydrogen in the demo and because the grid-connected installation will be profitable and make up for the net loss of the isolated grid and its green hydrogen production). The 500 MW is not really a part of the green hydrogen production or its industrial chain. The ProDoc already explains the timing of the isolated grid and green hydrogen production facilities of the Ningdong demo and the link with GEF project introduction and development efforts. The other Ningdong green hydrogen project mentioned in the article at the link has been developed and put into operation by Baofeng, a private company. We have added information on this project to the list of projects in what is now Exhibit 4 (formerly Exhibit 2). Further, after the table (following the four bullets summarizing findings in the table), we now provide some explanation of the nature of the Baofeng project and why the demo in Ningong is still needed, despite the existence of the substantial-scale Baofeng effort. Key points are that the Baofeng effort was not even known to most until after it was commissioned. This is reflective of the lack of release of information that characterizes the project. The GEF Project in contrast, will, as one of its priorities, provide monitoring data from its demos. The Baofeng project further involves just one company ? Baofeng produces the green hydrogen and also uses it. The GEF project demos involve multiple companies and purchase of green hydrogen will be a significant aspect of the project. Lastly, the Baofeng project has only the chemical industry as its end use whereas the GEF project diversifies end use and has both chemicals and heavy duty vehicles involved. The GEF project will further support an attractive environment for heavy duty FCVs in Ningong with the development of local policies, standards, and technical support.

7. Exhibit 3 Baseline initiatives financed by GEF/UNIDO

A new paragraph has been added to discuss lessons learned from the first three projects listed in Exhibit 5 (which was formerly Exhibit 3), particularly from the last of those three, China DevCom FCV. All three past projects informed the strong effort of the designers of China Green Hydrogen to carry out in-depth work with the demo cities in advance of the project launch to ensure their full participation and that many issues with regard to the demos have been worked out ahead of time. Other recommendations/ lessons are discussed, such as DevCom FCV?s recommendations that: (a) a future GEF project address renewable energy-based hydrogen production and (b) a future GEF Project put emphasis on other vehicle types besides public buses (which the Government of China was said in the relevant recommendation to be capable of handling). These other vehicle types may include heavy duty vehicles, which has now been made a key focus of the China Green Hydrogen

Project. Finally, Dev Com FCV recommendations spoke of talent development, which has been taken up in a significant way in the China Green Hydrogen Project

5 B. Project Description

5.1 a) Is there a concise theory of change (narrative and an optional schematic) that describes the project logic, including how the project design elements are contributing to the objective, the identified causal pathways, the focus and basis (including scientific) of the proposed solutions, how they provide a robust approach? Are underlying key assumptions listed?

b) 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?

c) Are the project components (interventions and activities) described and proposed solutions and critical assumptions and risks properly justified? Is there an indication of why the project approach has been selected over other potential options?

d) Incremental/additional cost reasoning: Is the incremental/additional cost reasoning properly described as per the Guidelines provided in GEF/C.31/12? Has the baseline scenario and/or associated baseline projects been described? Is the project incremental reasoning provisioned (including the role of the GEF)? Are the global environmental benefits and/or adaptation benefits identified?

e) Other Benefits: Are the socioeconomic benefits resulting from the project at the national and local levels sufficiently described?

f) Is the financing presented in the annexed financing table adequate and demonstrate a cost-effective approach to meet the project objectives? Are items charged to the PMC reasonable according to the GEF guidelines?

g) How does the project design ensure resilience to future changes in the drivers and adaptive management needs and options (as applicable for this FSP/MSP)?

h) Are the relevant stakeholders (including women, private sector, CSO, e.g.) and their roles adequately described within the components?

i) Gender: Does the gender analysis identify any gender differences, gaps or opportunities linked to project/program objectives and activities and have these been taken up in component design and description/s?

j) Are the proposed elements to capture and disseminate knowledge and learning outputs and strategic communication adequately described?

k) Policy Coherence: Have any policies, regulations or subsidies been identified that could counteract the intended project outcomes and how will that be addressed?

l) Transformation and/or innovation: Is the project going to be transformative or innovative? Does it explain scaling up opportunities?

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

7. cleared.

12. PM had a clarification exchange with the agency. While not reflected under the review sheet response, the revised annexes J,K,L from the ProDoc and budget now show consistently that the lines allocated to PV were actually not dedicated to power production, but to procuring/installing the electrolyzers for hydrogen production associated with the PV. Therefore this comment is addressed on the basis of these revised documents.

Please note for further notice that the PIF is not a promise or legally binding contract that GEF funds will be allocated to companies or any other stakeholders. Only the CEO ER confirms GEF financing. Important to bear in mind for expectation management with agency partners, especially if these are making investment decisions on this basis.

RR (09/24/2024):

All cleared except 7 and 12.

1. Cleared.

2. Cleared.

3. Cleared.

4. Cleared.

5. Cleared.

6. Cleared.

7 and 7bis. The project design team makes a compelling argument for a supply chain approach, which is well understood and consistent with project theory of change. The current understanding of GEFSEC is that with the current design, no GEF financing will go to directly subsidize grey hydrogen through these corresponding interventions at policy incentive level. Can you please confirm if this understanding is correct?

8. Cleared. This is noted with the scope clarification you provided on long ranges / cold weather.

9. Cleared - no additional burden is needed on project design/writing, but the provided information on site selection has such an importance that it would be adequate to reflect it in the project rationale section of the project document. If time allows, please consider this.

10. Cleared.

11. Cleared, with the understanding that budgetary overlap will be avoided to prevent impacting cost-effectiveness of the global green h2 platform activities, as noted above.

12. There is an improvement as some cases have been prioritized in the repartition of GEF and co-financing sources. However, in terms of maximum concessionality principles and of overall additionality, the need of solar PV (and wind) for concessional financing coming from the GEF is not

established in the new repartition of funding for pilots. Especially in case where the PV installation has already started or in the case of some pilots is already almost finalized. In such cases there is no additionality to provide GEF financing ex-post and the expense should be covered in its entirety by co-financing sources who apparently are able to cover the cost, having initiated the investment. This also applies more broadly, the GEF usually does not provide direct financing to renewable generation except in the context of mini-grids to support off-grid access. This will leverage more resources to be allocated to expenses where GEF contribution to total cost coverage is more critical (such as electrolizers, heavy duty fleet, data collection, etc). Please reflect in the allocation table under description of pilots and in the budget.

13. Cleared

14. Cleared

15. Cleared

16. Noted

WL and RR (6/27/2024):

a)

1. See comments above regarding reformulation of project objective statement and vocabulary on hard to abate sectors chosen for the project (chemicals and heavy duty vehicles)

2. See also comments above in section 1/2/3 of the review sheet on logical framework and its outputs/outcomes and reflecting them as well here in the structure of the theory of change and in project description.

3. Theory of change is split between the barrier analysis and the logical framework, so that it does not offer a clear picture of which causal pathway is associated to which suite of problems. Perhaps a quick fix would be to merge these two figures adding this connection, while preserving its readability.

4. Long term financial viability/sustainability of the demo projects should be clarified, including price and terms of any off-take agreements for green hydrogen if available. As the green hydrogen production cost is expected to be higher than the gray hydrogen market price in the near future, what measures are to be adopted to ensure long term price premium for the sale of green hydrogen and the green derivative products (e.g. ammonia) and to prevent operation below the technical capacity of different activities of component 2 due to lack of demand for green hydrogen, including equipment associated with the production and the consumption of green hydrogen, during the equipment lifetimes (15 to 25 years)?

To achieve environmental sustainability, could the agency please ensure the following during project lifetime:

- The water for electrolysis is sourced sustainably, including its supply, transportation and, where applicable, the energy source for water desalination.
- All the intermediate and final products for the green hydrogen consumption at the three sites are mapped. The consumption of green hydrogen should be used to substitute the consumption of fossil-fuel-based energy or feedstock, and it shouldn't support the transportation and consumption of fossil fuels, e.g. transportation of coal or fossil fuel vehicles or parts.
- The green hydrogen is utilized in energy and resource efficient production processes for intermediate outputs (e.g. methanol and ammonia), and a monitoring is done subject to data availability of the final end-use that these products are used for at portfolio level, to inform on the applications of green hydrogen in the context of decarbonization pathways in hard-to-abate sectors where no alternative with higher efficiency is available.
- No power from any fossil fuel power grid is used for the green hydrogen production. In the case of Dalian, please justify why the 15MW grid power is required and how it can be consistent with the standard/definition of green hydrogen. This seems relevant to clarify given that the project rationale identifies this as a particular challenge identified for other baseline initiatives that this project would seek to address.

-

b)

5. Please see comments on project rationale on how the GEF alternative will build on ongoing/previous investments (GEF and non-GEF), lessons and experiences in the country/region, and include elements of response throughout project description. For example the smart fleet approach to be tested in the Dalian pilot was already piloted at a smaller scale in previous GEF investment in hydrogen in China.

c)

6. Component and outcome one and its described activities seem to overly focus on the transport part of the scope of the project while the chemicals industry is almost not mentioned in the roadmap, policy and standards work. This seems to reflect the mandate of the PEE which is by design mostly on the automotive sector. Perhaps this is just a wording issue but it would be relevant to provide revisions in order to reflect the covered sectors in a balanced way in line with the theory of change of the project.

7. Activity 1.2.2 introduces the notion that incentive policies will be explored to attract users from hard to abate sectors to use hydrogen, and then in particular green hydrogen. Here and throughout project design it should be made clear that the purpose is to apply green hydrogen only in hard to abate sectors, as grey hydrogen is not a carbon abatement option; if incentives supported by GEF financing are set up, they cannot go towards financing end-use of fossil fuel or fossil fuel based hydrogen, and should be able to target specifically green hydrogen application - the risk if not doing so is to generate a carbon rebound effect where the demand pull generated on the consumption side results in increased emissions due to a hydrogen mix that remains predominantly grey.

7.bis. In annexes JFK, references are made to policy incentives for the pilots which currently do not discriminate the vehicle type (light, heavy) nor the source of hydrogen (green, gray, blue). Taking into account the comment above would also be relevant in these descriptions in line with project theory of change.

8. Clarification would be useful on whether public buses running on hydrogen are really considered, per activity 1.2.3, as hard to abate, given that the GEF finances already electric buses through the global electric mobility program.

9. Although described in detail in Annex JFK, the rationales for the selection of the three demo cities and the specific chemical off-takers for Component 2 may be further substantiated in terms of their competitive advantages in risks and opportunities, in comparison to other alternatives.

10. Activities under component 1.4. refer to blue hydrogen - please note that GEF support could only be eligible towards green hydrogen. If activities are made to promote non-green hydrogen, this risks reducing the GHG outcome of this project. It cannot be supported by GEF financing.

11. For output 1.11 and for component 4, please see comments on KM and on connection with the green hydrogen global program supported by the GEF and reflect these in the content of these activities.

e) and g) Well described in the project description - cleared.

d) and f)

12. On co-financing approach proposed for expenditures in pilots demos ? currently GEF financing is split on almost all budget lines of the pilots throughout capital expenditures and knowledge based pieces. Please prioritize GEF financing only on the areas where it makes the most sense in terms of additionality of GEF financing to stimulate the generation of incremental GEBs, aka for electrolyzers, heavy duty trucks, knowledge and data pieces, and renewables dedicated to industrial use, leaving co-financiers to cover the full costs of investments that are not the most additional (in the sense of already financed onsite in ongoing initiatives or not in dire need of concessional financing) or that are not fully aligned with programming directions (such as trucks carrying coal). This also makes sense from a more logistical perspective of the agency being able to source so many co-financing letters (see comments below on co-financing section of the review). Please also take into consideration the comment made in section 5.4 on risks related to specific co-financiers when considering these revisions).

i)

13. See comments under the gender and stakeholders sections below and please reflect in the project design.

j)

14. Please see comments in section 5.2.c below.

k)

15. On policy coherence, this is well identified on the policy and regulation side. On the policy side, please see comments above about the risk that subsidies targeting hydrogen sector at large may

induce a carbon leakage effect where demand pull results in increased grey hydrogen consumption and overall increased emissions. This is an important risk to address throughout project design.

i)

16. The technological aspect of the innovation approach of the project is clear and one of its strengths, which will be relevant to share for example through the green hydrogen global program.

Agency Response

UNIDO Response 09/09/2024

1. Comments above regarding reformulation of project objectives:

-The same revisions to the project objective statement have been consistently made at the beginning of the project description as were made in the Project Description Overview Table in response to comments.

-The hard-to-abate sectors chosen for the project have been clarified throughout the activity descriptions. Thus, heavy-duty vehicles or heavy duty FCVs are usually specified throughout the document instead of just "vehicles" or "FCVs." In earlier versions, "hard-to-abate sectors" was used to refer to "hard-to-abate industrial sectors." Now, throughout the text, recognizing that heavy-duty vehicles are a key GEF consideration of "hard-to-abate transport sector," we have also added in the word "industrial" throughout ("hard-to-abate industrial sectors") when we wish to refer to industrial sectors. At times, the text also specifies, "especially chemicals" with regard to hard-to-abate industrial sectors. Which is the highest potential industrial sectors for abatement through green hydrogen use. Most green hydrogen industrial work to date in China and work of this project's demos will be in the chemicals sector.

NB: Project Description for revisions to specify heavy-duty vehicles and clarify other "hard-to-abate" sectors are "hard-to-abate industrial sectors," especially chemicals. Throughout other portions of the document as well (to specify "heavy duty vehicles" and "hard-to-abate industrial sectors," "especially chemicals").

2. Comments above in section 1/2/3 of the review sheet on Log Frame:

The suggestions above on the outputs have been incorporated into the output statements both in the Project Description Overview Table and in the Project Description. The activities in the Project Description have also been modified in places to more strongly reflect the suggestions. Some of the areas of revision:

-Output/ activity descriptions emphasize the green hydrogen angle when the overall topic is broader (e.g. hydrogen in general, heavy duty FCVs in general).

-Mention of the GEF Green Hydrogen global program has been increased, with activities specifically indicating how they will involve the program partners.

-Reference to gender in the outputs has been added and gender aspects are further elaborated, with more angles than before, in the activities.

-An effort has been made to relate broader outputs to the project objective/ explain the link.

-The number of outputs under Outcome 1 has been reduced from 16 to 8.

-The Theory of Change reflects some of the above changes, namely the output consolidation and revision, as well as some of the revisions in the objective and outcome statements. (See also response to comment 26 regarding changes to the Theory of change.)

3. Theory of change consolidated and readability preserved:

We have incorporated the barriers into the Theory of Change, so now there is just one diagram. The revised Theory of Change diagram shows the barriers linked to the outcomes and outputs, respectively via arrows heading from the outcomes and outputs towards the barriers to indicate barrier removal. The diagram also retains arrows heading from the outputs towards the outcomes and outcomes, etc. to show how lower level results work together to yield higher level results. Readability well preserved...

4. Long-term financial viability/sustainability of the demo projects:

We have added a paragraph entitled "Notes on financial viability and environmental sustainability of Outcome 2 demos" that contains all of these points and have also incorporated these points into the activities for each of the three demo cities. In each case, assurance of financial sustainability of the green hydrogen production is included as a feature of the respective demo's green hydrogen production activity, whereas all the other items are included under the respective demo's activity for safety and environment. The added paragraph at the beginning part of Outcome 2 (before the outputs and activities are listed) reads as follows:

"Notes on financial viability and environmental sustainability of Outcome 2 demos:

(1) Each of the Outcome 2 demos will ensure financial viability of the green hydrogen for the lifetime of the installed equipment via various means, such as long-term off-take agreements and incentive subsidies to either the green hydrogen producer or the green hydrogen purchaser, so that returns on green hydrogen or its price will be at parity or even more attractive those aspects of grey hydrogen.

(2) In terms of environmental sustainability a number of steps will be taken: Further, the project will sign contracts with participating companies that require, as relevant, the use of green hydrogen only. Field visits will periodically confirm compliance.

(a) The project will ensure that no power from a fossil fuel (or partially fossil fuel) power grid will be used in the production of green hydrogen.

(b) The project will ensure water used in electrolysis is sourced sustainably, including its supply, transport, and, in the case of Dalian, energy source for desalinization.

(c) All intermediate and final products related to the consumption of the project's green hydrogen will be mapped. The consumption of the green hydrogen will be used to replace fossil fuels. In addition, the green hydrogen will be used to transport EV or FCV complete vehicles or parts assembly.

As clarified in coordination meeting with GEF Sec colleague, in line with Chinese National Development & Reform Committee NDRC, "[Medium- and Long-Term Plan for the Development of the Hydrogen Energy Industry \(2021-2035\)](#)" strong focus is placed on promoting the application of hydrogen fuel cells in medium and heavy-duty vehicles, and freight vehicles, hence aligning with the GEF's hard-to-abate transport definition.

(d) For intermediate products (particularly ammonia and methanol), it will be ensured that the green hydrogen is used in energy efficient and resource efficient production processes. Further, there will be monitoring of ultimate end uses, when possible. And, in association with these ultimate end uses, work will be done to assure that green hydrogen is the best pathway towards these final end uses in terms of energy and resource efficiency. Brief reference to these measures (1 and 2a, b, c, and d) is included in the project activities, as relevant.?

-The 15MW grid integration from Dalian has been removed from the project document after careful reconsideration of the project teams and demonstration site. For clarity, this grid power was initially planned to be provided by a clean energy producer in an eco-industrial zone, where the energy is largely RE generated. After considering the percentage of green energy in this mix, it is removed from the project.

5. Comments on project rationale (GEF and non-GEF) inv. lessons and experiences

The response to comment 23 explains how lessons learned from prior projects are now incorporated into the Project Rationale Section. The main lessons adopted and discussed in that section are:

(1) in-depth work and planning with the demos cities prior to project launch to ensure commitment and that details of the demos are worked out in advance,

(2) carrying out a GEF project focused on renewable energy based hydrogen production, (3) putting a focus on other vehicles besides city buses, such as heavy duty logistics vehicles,

(4) working on talent development. Now, these four items, along with GEFSec point regarding (5) the small fleet approach that will be used in Dalian having been tested in previous GEF hydrogen investments in China, have been incorporated into the project description. Because recommendations/ lessons (2) and (3) cut across all components, they are now discussed in the Project Description just after the theory of change discussion as follows:

?The overall project design reflects some lessons and recommendations from prior GEF project work on hydrogen in China. In particular, terminal evaluation recommendations for China DevCom FCV, a UNDP-GEF project, including (1) the development of a GEF project focused on using renewable

energy based power generation to produce green hydrogen and, (2) on the vehicle side, moving beyond prior projects? focus on public buses to focus on other heavy duty vehicles, such as logistics trucks, have been adopted. That is, the current project, in its overall focus on green hydrogen and its focus, as one of two end use areas, on heavy duty vehicles, has adopted both of these recommendations coming out of the prior GEF hydrogen-related project in China.?

Item 1 cuts across Outcome 2, the demo outcome. Thus, a new paragraph in the introduction to Outcome 2 reads as follows:

?Note on design process for Outcome 2: In-depth work and planning in close coordination with the demo cities and their participating companies was conducted prior to submission of the full project design. This approach reflects lessons learned from prior GEF projects in China involving hydrogen. Those lessons stress the importance of developing strong commitment from demo cities so they will stay the course with the project through its full lifetime. They also stress the importance of working out as many of the demo details in advance, so that the project will be as implementation ready as possible and not suffer delays due to uncertain direction. Both of these two lessons were adopted in the detailed planning work conducted with the cities prior to submission of this document.?

Regarding item 4, to the rationale for Outcome 3 has been added:

?This component?s emphasis reflects one of the needs identified in the prior hydrogen-related project in China, UNDP-GEF China DevCom FCV ? the need for talent development.?

Regarding item 5, to the end of Activity 2.3.4 (regarding the deployment of green hydrogen fueled heavy duty vehicles in Dalian) has been added the note:

?The smart fleet approach for the 50 intelligent heavy duty trucks builds on prior GEF hydrogen work in China, where a fleet with a smaller number of intelligent vehicles was piloted.?

6. Realignment of Component and outcome, not overly focusing on the transport:

After reviewing the referenced outputs, our assessment of the original text is as follows:

Roadmap output: This output states specifically that less attention will be put on vehicles, as there is already an NEV roadmap that includes FCVs. So, there is definitely not a heavier emphasis put on vehicles. One reason there might have been confusion about the emphasis of this output is that the previous version of the ProDoc referred to the selected industrial sectors as ?hard-to-abate sectors,? which is confusing as heavy duty vehicles are also a part of ?hard-to-abate sectors.? This has now been corrected and the industrial sectors are now referred to as ?hard-to-abate industrial sectors.? And, when appropriate, elaboration has been added such as, ?especially chemicals.?

Policy output: This output is divided into part (a), incentive policies, and part (b), safety management and supervision. Considering (a), of the five items that represent specific links in the industrial chain, one is hydrogen production, one is hard-to-abate industrial sectors, one is FCVs, one is HRSs, and one is transport of hydrogen. So, two out of the five are vehicle specific (FCVs and HRSs) and one is industrial sector specific. This seems reasonable, since FCVs and HRSs need differentiated attention.

As above, however, we have elaborated the hard-to-abate industrial sectors as especially being chemicals. For (b), we find the balance roughly the same and have now specified "especially chemicals" with regard to hard-to-abate industrial sectors. There is the challenge that FCVs and HRSs are mentioned separately, so thus perhaps giving more weight to the vehicle chain. To balance things more, we have added mention of "safety management regulations/ guidelines for storage and use of hydrogen in the chemicals sector" in Activity 1.2b.1.

Special hard-to-abate industrial sectors output: We would like to point out that Outcome 1 has an output (Output 1.5) dedicated specifically to hard-to-abate industrial sectors (their sector policy, plans, and regulations). As previously we had left out the word "industrial," it may not have been clear that this output focuses on industrial sectors only and not transport. We have added to the output and its activities that there will be special emphasis on chemicals.

Standards output: This output (Output 1.4), has three parts: (a) standards tree, (b) management, operational, and safety standards, and (c) product standards. The standards tree has balanced emphasis on end uses (and now the industrial end uses are elaborated to especially include chemicals). It is acknowledged that the management and operational standards (part b of the output) are skewed towards vehicles. The product standards (part c of the output), as originally drafted, also put more emphasis on the vehicle chain, but we have now added to the activity on "additional standards" emphasis on hard-to-abate industrial sectors, as needed, especially chemicals. While, overall, then, there is some skewing of the standards output (Output 1.4) to the vehicle chain, some modification has been made towards balance. Also, because there is a dedicated output to hard-to-abate industrial sector policy, planning, and regulations (Output 1.5) (and no such dedicated output for vehicles as end use), overall, Outcome 1 is deemed to be well balanced between the project's two main branches of end use.

7. Incentive Policies in Hard-to-abate Sectors - Activity 1.2.2

The design team feels strongly that a "full value chain" approach is needed to promote green hydrogen, because the end use of hydrogen in transport is still at an early stage and because industrial sectors may be more likely to uptake green hydrogen in a full value chain project, where production has links through the project itself to industrial end use. The team feels that a systems approach is needed to remove barriers all up and down the value chain. And now through the document mechanisms have planned, for monitoring and enforcement, including contractual obligations before implementing, to ensure the exclusive use of green hydrogen in all funded activities, to help guide and monitor the implementation of green hydrogen initiatives,

One incentive approach being transitioned to in parts of China for NEVs is the "reward after" approach - meaning provide subsidy or reward after you can confirm the vehicle is doing what you want it to do, such as using green hydrogen. "Reward after" is being used in China's five hydrogen energy demo city clusters, which typically already have a well-established hydrogen energy foundation. Assessment of the design team, however, is that the three demo cities, especially Ningdong and Shenyang, do not have such a foundation and this will be true of many other locations in China - both in terms of vehicle infrastructure and the entire hydrogen industrial chain. As such, initial funding is needed to set up the chains and enable FCV demos. The "reward after" approach will be more effective once viable business

models are operational. The aim of the project, in fact, is that, once the industrial chains are established, a next step could be 'reward after' policies to ensure green hydrogen uptake.

The project will sign demo contracts with enterprises at the start of project implementation and the contracts will clearly stipulate the requirement of using green hydrogen. The demo projects will undergo annual assessments to ensure compliance. Thus, in the case of the demos, the 'subsidize before' approach will still effectively guarantee the use of green hydrogen while helping the development of a complete green hydrogen industrial chain. This is explained in an additional note in the introduction to Outcome 2.

7.bis. In annexes JFK, references to policy incentives:

Please see response above to comment 30. In order to promote green hydrogen, a full value chain, systems approach is needed with barrier removal all up and down the chain. Downstream from the production of green hydrogen, it is difficult to make links in the chain of green hydrogen specific. And, in the demo cities, the industrial chain is not mature enough for a 'reward after' incentive approach for end uses. The contracts with the demo cities will ensure uptake of the demo green hydrogen.

UNIDO Response 10/22/2024

7 Further Clarity: Confirmed, no GEF financing will directly fund grey hydrogen through any of the proposed policy interventions or incentive mechanisms. All GEF resources allocated to policy, strategic planning, and incentive frameworks will strictly target the promotion of green hydrogen production and use. The project also includes mechanisms to ensure that green hydrogen is prioritized, such as contracts with project participants requiring the use of green hydrogen in demonstration cities, which aligns with the project's objective to promote green hydrogen value chains in China, as described throughout the project. Project contracts will require that only green hydrogen will be used. As a result, subsidies for incentive policies via these contracts will require end uses to ensure only green hydrogen is used.

8. Clarification/Submission on public buses running on hydrogen

A footnote has been added to explain the advantages of fuel cell buses over electric buses. We would argue that public buses are a hard-to-abate sector, particularly in certain situations, such as long routes or cold weather. One solution for carbon abatement of public buses may be electric buses, but fuel cell buses provide certain advantages as outlined in the footnote that make them worth piloting/ deploying. The foot note reads as follows:

'While the GEF is financing electric public buses through its Global Mobility Program, public buses are still considered a hard-to-abate sub-sector that can benefit from green hydrogen. This is because fuel cell buses do better in cold climate than electric buses. Fuel cell buses also have longer ranges, so are especially suitable for routes that are long and on which it is inconvenient to refuel too often. Further, fuel cell buses can refuel more quickly. While rapid charging is an option for electric buses, it still presents some challenges to battery life.'

9. Chemical Off-takers of Component 2 described in detail in Annex JFK:

A paragraph has now been added to the introduction to Outcome 2 explaining the rationale for demo city selection. It also mentions the rationale for selection of company partners, which includes the chemical off-takers. The added text reads:

Note on demo city selection: The cities of Ningdong, Shenyang, and Dalian were selected for the following reasons: Given the current high cost of hydrogen transport, this green hydrogen project is designed to demonstrate full green hydrogen industrial chains, where the links of the chain are co-located in single cities or single cities and their surrounding areas, such that the hydrogen does not have to be transported over a long distance. Thus, cities that have sites for potential large-scale renewable energy based power generation are needed to provide isolated grid green power for green hydrogen production. Further, the project aims to demonstrate such green hydrogen industrial chains in less developed/ less prosperous parts of the country – the Northwest (where Ningdong is located, in Ningxia Province) and Northeast (where Shenyang and Dalian are located, both in Liaoning Province). In addition, locales where there is limited development of FCVs were selected, so that the demos could support initial ramp up in this end use. The project invited proposals from interested cities and selected those cities with strong proposals that showed a commitment to following through with promised demos and providing the needed co-financing. Company partners were selected by the demo cities themselves, based on the companies' level of commitment and suitability of their proposed involvement to the project objective. This includes the selection of chemical off-takers in Ningdong and Shenyang, which are motivated to make use of green hydrogen due to anticipation of zero carbon targets and/or attractive markets abroad for green chemical products.

10. Component 1.4 reference to blue hydrogen:

Reference to blue hydrogen in what is now Output 1.3 and its associated activities has been removed.

11. KM and synergies with Green Hydrogen Global

Foregoing comments of the GEFSec on KM discuss: (i) the importance of including links with the GEF Global Green Hydrogen Program, (ii) that it is not the China project's role to address global aspects, but rather the Global Program's role, and (iii) including gender best practices in KM work. For (i) and (ii), please see response and associated page numbers for comment 14 and, for (iii), please see response and associated sections/ page numbers for comment 15. As for the former Output 1.11, which was to be preparation of the Global Green Hydrogen Review, this is now a sub-output with associated activities. As noted in the response to comment 14, the Review will be prepared in conjunction with the GEF Green Hydrogen global program.

12. On the co-financing approaches in pilot demos streamlined:

As relevant,

For Dalian, we have deleted GEF funding for the HRSs and for the advanced fuel cell stack demo, moving this funding to the tidal flats PV and green hydrogen production and the partner GW scale PV and green hydrogen production for green chemicals, respectively.

For Ningdong, we have deleted the GEF funding for HRSs and moved it to the green hydrogen production facility.

For Shenyang, we have deleted GEF funding for (i) HRSs and (ii) Dadong District Hydrogen Energy Industrial Park, and Hydrogen Energy Exhibition Hall.

Regarding co-financing letters from the industries, the GEF Agency has sourced from top companies contributing to each demonstration sites, parallel to provincial government commitment. See details in co-financing.

UNIDO Response 10/22/2024

12 Further Clarity: PPG findings indicate that, while grid-connected PV installations can be a profitable business (once a PPA is signed with an off-taker), isolated grid PV for producing green hydrogen still operates at a loss. Indeed, one demo operator in Ningdong is using the profits from a grid-connected PV system to internally subsidize the investment in isolated grid PV green hydrogen production, since the latter would otherwise operate a big loss. We have added footnotes to the demo annex on Ningdong and the demo annex on Dalian to explain this point as the rationale for GEF financing of isolated grid PV for green hydrogen production.

Additionally, PV developments have started or at the completion stage triggered by approval of the project PIF

13. Comments under the gender and stakeholders' sections:

Please see response to comment 15. As noted in the response, prior to revisions, nine activities already included gender aspects. In response to the comments, gender has been specifically incorporated into several outputs and additional activities.

In the Project Description: Activities 3.1.1, 3.2.1, 3.2.2, 3.3.1, 3.4.1, 3.5.1, 4.2.1, 4.2.3, and 4.5.1 (already had gender aspects).

New additions: Output 1.2, Sub-output 1.2a and Sub-outputs 1.2b and including activities under them. Output 1.4, Sub-output 1.4b, Sub-output 1.4c, and activities under them. Output 1.5 and Activity 1.5.1. Output 1.8, Sub-outputs 1.8a and 1.8b, as well as associated activities. Output 2.4 and associated activities. Outputs 3.1, 3.2, and 3.3 and associated activities. Output 3.4. Output 3.5 and associated activities. Outputs 4.2, 4.3, 4.5 and 4.6 and relevant activities. The two M&E outputs and associated activities

14. Please see comments in section 5.2.c below:

The comments for 5.2.c outlined as comment 42 in this responses file. Our understanding is that, applied to the project description, GEF Sec wishes there to be more obvious links with the GEF Green Hydrogen global program and lessons from past GEF projects incorporated into the Project Description. Both items have been addressed in response to preceding comments.

Regarding incorporation of the GEF Global Program, please see response to Comment 14.

NB: For reference to links with GEF Green Hydrogen global program, see Output 3.1 and conference description under activities, Activity 3.2.2, Output 4.1 and its two activities, Output 4.2 and its activities, Output 4.3 and its activity, Output 4.5 and relevant activity, and Output 1.6c and its three activities.

Regarding incorporation of lessons learned from past GEF projects, please see response to Comment 28. Additionally, for reference to lessons learned from past GEF projects, see 3rd paragraph of project description, note on design process for Outcome 2 (4th paragraph under Outcome 2), end of rationale of Outcome 3, and added sentence at end of Activity 2.3.4

15. On policy coherence, subsidy risk of demand-pull for gray Hydrogen induced, opposed to Green Hydrogen (Carbon leakage):

To address the risk of subsidies potentially leading to increased grey hydrogen consumption and emissions, the project has incorporated measures like signed contracts with implementers, periodic site visits, and close monitoring to ensure a focus on green hydrogen. The policy framework strongly emphasizes promoting green hydrogen, supported by government and private sector engagement. While some policies and standards encompass the broader hydrogen sector (as informed during our coordination with GEFSec colleague), they are essential for building a sustainable green hydrogen market. Technologies and infrastructure such as storage, transportation, and refueling will support green hydrogen. We believe this comprehensive approach will ensure long-term scalability and competitiveness of green hydrogen.

Additionally, in response to GEFSec comments, this issue has now been systematically address in the project description by emphasizing the green hydrogen focus and limiting use of GEF funds to areas that are specific to green hydrogen. Activities that may be interpreted to be broader than green hydrogen alone now have an added parenthetical to designate GEF funds are to be used primarily on green hydrogen specific areas. Finally, the introduction to Outcome 2 explains that the project will sign contracts with involved companies and require the end use companies to commit to using green hydrogen and assess them regularly. See responses to item 8 and items 30 and 31 regarding use of GEF funds for green hydrogen aspects, about the contracts with demo city companies to ensure green hydrogen use, and about specifying the green hydrogen focus of the project.

16. The technological aspect of the innovation approach

Based on this GEF Sec comment, we have made a few additions to the activity statements to ensure that there will be emphasis on sharing the innovation approach of the China Green Hydrogen Project, particularly the technological aspect, with partners of the GEF Green Hydrogen global program. To

the (newly added) statement in activity 4.1.1 raising the global program, we have added another sentence: "Finally, dissemination work will put emphasis on GEF Green Hydrogen global program partners. With regard to these partners, there will be an emphasis on sharing with them innovative approaches of the project demos, particularly technological aspects." To Activity 3.1.1, we have added: "Three of the five conferences (i, iii, and v) will include attendance by GEF Green Hydrogen global partners. During the conference and associated field trips the partners may take, there will be an emphasis on sharing with them innovative approaches of the China Green Hydrogen Project, particularly technological aspects."

5.2 Institutional Arrangements and Coordination with Ongoing Initiatives and Project

- a) Are the institutional arrangements, including potential executing partners, outlined on regional, national/local levels and a rationale provided? Has an organogram and/or funds flow diagram been included?**
- b) Comment on proposed agency execution support (if agency expects to request exception). Is GEF in support of the request?**
- c) Is there a description of coordination and cooperation with ongoing GEF and non-GEF financed projects/programs (such as government and/or other bilateral/multilateral supported initiatives in the project area, e.g.).**

Secretariat comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

Thank you for the clarifications. Cleared.

RR (6/27/2024):

a) yes. However there is a mismatch between the description provided and the chart presented in Exhibit 7 where UNIDO is presented as executing entity, while the description presents it as implementing agency, with MIIT and IHFCA are designed as executing entities. Please confirm that the description is correct and if so revise accordingly exhibit 7, while also confirming that the implementing agency will play no role in the execution of the project, as also mentioned at PIF stage (as an answer to the template question "Will the GEF Agency play an execution role on this project?" which is currently left blank).

b) no support requested

c) the description is very short - please see comments made on the KM components of the project description in review sections above for improvement of the description with the green hydrogen global program in particular. Also, lessons learned from past GEF-financed projects in the targetted industries and value chains should be included in the project rationale section as noted above, which is not done at this stage.

Agency Response
UNIDO Response 09/09/2024

a. Institutional Arrangements: Updated Exhibits

Exhibit 7 (now 8) has been corrected; UNIDO is GEF Implementing Agency only. The Exhibit 8 flow of funds and MIIT and IHFCA are the Project Executing Agencies for flow of funds. We have added some simple text to explain this:

?Funds flow from the GEF (funding agency) to UNIDO (GEF Implementing Agency) to MIIT. MIIT, the Executing Agency, will then contact the work in full to IHFCA, its Delegated Executing Agency.?

Exhibit 6 (now 7) has also been revised to reflect UNIDO as GEF Implementing Agency and MIIT and IHFCA as Project Executing Agency. (Again, MIIT delegates execution to IHFCA.). The text explaining this has been elaborated as follows:

?The role of IHFCA vis-?-vis the project will be working as the delegated executing entity entrusted by MIIT. That is, the ministry (MIIT) will have oversight responsibilities of the project lead executing entity, IHFCA. IHFCA, in turn, shall execute the project, responsible for day-to-day operation, through the National PMU (project management unit) and the project?s satellite PMUs in each of the three demo cities.?

c. Coordination and cooperation with ongoing GEF and non-GEF projects and programs:

Please see response to comment 14, 35, 38, and 40 regarding incorporation of GEF green hydrogen global program and response to comments 23, 28, 38 about how lessons from past GEF projects are incorporated into the rational and design of this project.

5.3 Core indicators

a) Are the identified core indicators calculated using the methodology and adhering to the overarching principles included in the corresponding Guidelines (GEF/C.62/Inf.12/Rev.01)?

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

Are the GEF Climate Change adaptation indicators and sub-indicators for LDCF and SCCF properly documented?

Secretariat comment at CEO Endorsement Request

Cleared

RR (11/4/2024):

The justification text under the core indicator table showed outdated text after latest resubmission. This is now addressed.

RR (11/1/2024):

2.a. Cleared, impact now appears in the right category

2.b. Cleared. Well noted - the GEF results framework allows of course the possibility for the agency to report on any observed overperformance on the portal during monitoring and evaluation phase.

RR (10/25/2024):

1. Noted

2.a. The direct impact (11.4Mt) is still under core indicator 6.1 in the table > it should be 6.2. It is also missing the indirect impact. But given the turn of events on the calculation of the latter, agency may prefer to opt for omitting such impact at this point.

2.b. The indirect impact has not changed - it was PM understanding that the agency would apply a causality factor of 10% to the replications, without changing the scope of the replication number. But it is actually not the case. Proponents argues either to increase the number of replications and reduce the attribution factor, or to reduce the replications but with no factor. It does not make sense for a replication that is not financed by a revolving fund facility to have a 100% attributability to GEF financing. Please apply an attributability factor to the replication outcome, or use a top-down estimate, with an even more conservative causality factor. But applying a more conservative factor while artificially increasing the expected size of replications is not methodologically honest. With this, indirect impact would not be expected to be at the level of 45Mt where it currently is. The methodologies referenced by the agency below are obsolete and new guidance will be shared to further clarify this point.

Please adjust the justification under the core indicator table as well.

RR (09/24/2024):

1. Thank you for the useful addition. It seems that the 450 MW wind phase two in Shenyang should be treated the same way as the 200 MW PV phase two of Ningdong and not be accounted for. Could you confirm? Can you please provide more justification on the connection of all these additional RE capacity with the project, confirming that the only reason for these to be in place are the existence of the GEF funding for the associated green H2 production?

2. Please see follow up comments:

- On data entry in the portal table: The core indicator table now shows indeed 11.4 Mt of direct emission reductions, but it appears under core indicator 6.1 still (which is for the AFOLU sector) - please report the emission reductions under core indicator 6.2 instead. Also, the lifetime still appears as 5 years. As your justification points to the coexistence of two lifetimes for the calculation (20 and 25), per guidelines, please report the shortest lifetime on the table, so 20 years.

- On indirect emission reductions : The citation note below precisely makes the point of the initial comment. As noted in earlier comments, we would not expect the assumptions on causality of the GEF energy efficiency calculator, which is more than 15 years old and applied to a different sector

with different assumptions and intervention modalities, to be applicable as such in other sectors. Moreover, the example cited below refers to cases, frequent in past GEF EE projects, where interventions through facilities such as revolving funds lead to replications directly attributable in their entirety to the initial GEF funding. Per GEF RMF Guidelines, only emission reductions attributable to GEF financing and co-financing should be reported on. In the case of this project, the replications are expected to be influenced by the project but will still be operated by other actors that are not yet identified nor co-financiers at this point. In such cases, in all sectors of interventions (including in the case of transport, but also of other GEF-financed infrastructure projects) a causality factor should be applied both for bottom-up or top-down estimates, both for replication and for market penetration causal chains. You are free, based on your knowledge of the Chinese market and the reasonable influence the project may have on it, to consider then a higher amount of potential replications. But the causality factor should be extremely conservative. The values used in the GEF EE manual are not applicable as such 15 years later on a different sector, especially in a market that big and with a technology already mature to this point with multiple pre-existing initiatives. 20% seems highly exaggerated in that regard. Please revise as the current figure for indirect emission reductions is not acceptable per GEF standards.

- Thank you for clarifications on the risk of rebound effect - cleared. This is well noted, in connection with additional forecast data provided in the rationale. Please see follow up question there in terms of connections with government targets. This comment is cleared from the core indicator perspective.

3. Cleared.

WL and RR (6/27/2024):

1. Core indicator 6.4 (Increase in Installed Renewable Energy Capacity) - although not mentioned at PIF Stage, the description provided of the demo pilots indicate that additional renewable capacities are expected to be in place in connection with this project for green hydrogen production. This would be relevant to report under core indicator 6.4 and in the results framework.

2. GHG : the currently reported result for core indicator 6, of 114 MtCO₂eq, is unrealistically close to the 10% mark of the entire GEF-8 portfolio targets. Please address the several inconsistencies noted below to land on a more conservative estimate:

- Consistency of reporting across categories and justified numbers : While 114 Mt are reported in the core indicators table, all of it direct, the justification provided in annex only refers to 11.4 Mt direct and 45.6 Mt indirect emission reductions. Please ensure consistency between the reported amount in the table and the justified amount per GHG calculation. Please also ensure that the table reflects the appropriate categories, with direct and indirect emission reductions reported separately - also please make sure that these are reported in core indicator 6.2, not 6.1, as this is outside of the AFOLU sector. Finally, the duration of accounting reported on the core indicator table should reflect the lifetime of investments/equipment supported by the project, which per project description and GHG justification does not seem to be 5 years.

-

- Looking at the justified amount : The indirect amount, 45.6 MtCO₂eq, is obtained by using a replication factor of 4 on the direct emission reductions. However, when using a bottom-up to calculate indirect GHG emission reductions per GEF GHG accounting guidelines, a causality factor should be used to reflect the attributability of this impact to GEF interventions. Given the preexistence of a relatively mature sector and technologies for green hydrogen, the level of causality factors to be used would not be as high as those used in the energy efficiency tool which is dedicated to very specific interventions where assumptions on market penetration are more straightforward. Therefore with application of a conservative principle, it would not be expected for this causality factor to be above 10%. To sum up, please ensure that a causality factor is applied to the output of the indirect calculation to reflect attributability - it is expected that the indirect emission reductions would not be as large as the direct emission reductions through this method ; please note that as a bottom-up approach is used, it cannot be combined with top-down estimates as these would overlap. Please also note that if project implementation shows a greater impact attributed to GEF supported intervention it will still be possible to adjust this estimate at MTR and TE stage.

- Potential for carbon leakage/rebound effect is not accounted for - given coexistence in project sites with coal industries for hydrogen production, what would be the likelihood of increasing demand for coal-based hydrogen production around project sites, which may offset the benefits of green hydrogen? Without clear dynamic data on plans in project areas for coal-based h₂ production vs green h₂ production related to their envisaged consumption trends, it is difficult to tell if the project will not result in just incentivizing consumption in an energy mix that is decarbonizing vs getting more carbon intensive. Please see comments above on project relevant trends noted on this regard in the project rationale section of this review and include justification elements in the GHG calculation annex.

- Looking at emission factors and activity data : Please ensure that the green hydrogen production/consumption at each demo site is consistent between the GHG emission reduction calculations and project design description, e.g. 3081 tpy consumption in Ningdong in Annex V vs 2952 tpy production in activity 2.1.1 vs. 5000 tpy in Annex IJK Exhibit 4. Please justify the exclusion of the GHG emissions from green hydrogen transportation and from the grid power, where applicable.

3. Beneficiaries : please see comments in the gender section of this review sheet.

Agency Response

UNIDO Response 09/09/2024

1. Core indicator 6.4 (Increase in Installed Renewable Energy Capacity)

Additional renewable energy power generation capacity expected to be installed as a part of the project demo includes the following:

1. Ningdong **120 MW PV** (certain, operational) + **200 MW PV** phase two uncertain. The 120 MW is now operational but was stimulated by planning for the GEF project. Given the uncertainty of Phase Two, a total of 120 MW is included as Ningdong's contribution to the core indicator.
2. Dalian 100 MW PV in tidal flats for main demo + GW scale PV and wind for associated project. Given the direct link of the former to the project and the 'partner' link of the other, we focus on the 100 MW PV for Dalian's contribution to the core indicator.
3. Shenyang 50 MW wind phase one + 450 MW wind phase two = 500 MW wind total as Shenyang's contribution to the core indicator.

Grand total 120 MW PV Ningdong + 100 MW PV Dalian + 500 MW wind Shenyang = 720 MW RE power capacity

The 720 MW is now included in the core indicator template, the Project Results Framework (Annex C), and the Project Results Framework with Outputs (Annex N). It has been added as a fifth indicator under Outcome 2 in the latter two items.

2. GHG ERs typographical error consistently rectified:

The direct GHG ERs indicated in the Core Indicators included a typographical error. It should have been **11.4 MtCO₂eq** instead of 114 MtCO₂eq for direct GHG ERs and thus not such a large proportion of the GEF-8 portfolio target. We would thus guess that GEFSec would no longer see the need for a more conservative estimate. Responses to individual items, however, are below:

-The error in the Core Indicators table has been corrected and the table for core indicator 6.2 (and not 6.1) is now filled out to show the targeted direct GHG ERs and the targeted indirect GHG ERs at CEO Endorsement. These now fit with the GHG calculations provided Annex V. Annex V uses a lifetime of 20 years for heavy-duty vehicles and 25 years for all other equipment. This lifetime has now been corrected in the core indicator table.

-Regarding bottom up indirect/ **consequential emission** reductions methodology: The GEF sources we have seen apply the causality factor only to top-down, not to bottom up. We will provide sources and quotes below. Regardless which approach is correct (i.e. using or not using a causality factor with the bottom-up method), the two different 'bottom-up?' approaches, we believe, would generate different assumptions about what's included in 'bottom up.' We would have chosen a higher replication factor if causality were to have been used. If using that methodology, we would have included more projects and assumed our project had only a partial influence on them. Instead, we chose a smaller replication factor, assuming our project had a decisive influence on a small handful of projects through its replication and scale-up activities. Given the pace of the market, if we are using a bottom-up methodology with a causality factor, it would not be excessive, we believe, to estimate 20x replication with causality factor of 20%, which yields four times the direct emission reductions. Instead we use a

4x replication factor for projects decisively due to our project, which also gives a four time result.
Sources:

Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects (April 16, 2008): "The bottom-up approach for calculating indirect GHG reductions starts from the direct effects of the investments under a project, and assumes that a multiple of these effects is going to be achieved by replicating the project's investments" Mathematically, the GHG emission reductions are calculated with the same formula as in the case of direct effects, and then multiplied by the assumed factor of replication:

CO2 indirect BU = CO2 direct* RF; with

CO2 indirect BU = emissions saved with investments after the project, as estimated using the bottom-up approach, in tonnes of CO2 eq

RF = replication factor, i.e., how often will the project's investments be repeated during the 10 years after project implementation

CO2 direct = estimate for direct and direct post-project emission reductions, in tonnes of CO2 eq?

Manual for Calculating Greenhouse Gas Benefits of Global Environment Facility Transportation Projects (2011)

"The formula for estimating indirect impacts with the bottom up approach is:

CO2 indirect BU = CO2 direct* RF; with

CO2 indirect BU = emissions saved with investments after the project, as estimated using the Bottom-up approach, in tons of CO2 eq

RF = replication factor, i.e., how often will the project's investments be repeated during the 10 years after project implementation, determined by expert and reflects the degree to which the project emphasizes activities which encourage replication

CO2 direct = estimate for direct and direct post-project emission reductions, in tons of CO2 eq?

Guidelines for Greenhouse Gas Emissions Accounting and Reporting for GEF Projects ? Findings and Recommendations of GEF Working Groups (2015):

This document refers to causality factor in conjunction with top-down approach, but not in conjunction with bottom-up approach.

We have added elaboration to Annex V on GHG ER estimates to explain the two different bottom-up approaches that might be used (with or without causality factor) and how we'd expect to arrive at a roughly equivalent result from them.

-Rebound effect: It is indeed a problem that coal based hydrogen has higher GHG emissions, when it comes to heavy-duty vehicles, than diesel equivalents. According to some sources, coal-based hydrogen, which may represent 60-65% of hydrogen consumption in China, when use in the vehicle sector is considered, may be responsible for almost 60% more GHGs than diesel used in vehicles, whereas methane based hydrogen vehicles emit perhaps 35% less than diesel equivalent vehicles. Yet, based on the project design and plans for the demos, we believe the project will not result in more net emissions from fossil fuel based hydrogen beyond what would have been generated in the business as usual scenario. There are a number of reasons for this:

- ? The project demos will use exclusively green hydrogen. Contracts will be signed with companies to ensure this and there will be annual assessments to check compliance.
- ? The project puts strong focus in its TA work on green hydrogen and supporting policies.
- ? Forecasts (such as presented in Exhibit 2 of the ProDoc) show China actually reducing grey hydrogen production between 2023 (35 million tons) and 2030 (23.4 million tons) with green hydrogen not only making up the gap but allowing overall hydrogen production to go. This project will facilitate realization of the forecast. Yet, the forecast in and of itself reflects the strong push of net zero policies in China. Given that forecasts are showing a drop in grey hydrogen over the next six or so years and beyond, it can be said that the trends favor the project's efforts not to create 'leakages' by stimulating greater use of grey hydrogen.

Based on these three items, the industry experts interviewed, and project design entities do not see a need to include leakages to coal based hydrogen (i.e. increases in coal-based hydrogen production as a result of project activities) in the GHG emissions calculations. This explanation is now offered in the GHG annex (Annex V) and also in the brief explanation of GHG methodology following the Core Indicator table in the main text.

-Regarding the inconsistencies noticed in Ningdong's annual targeted hydrogen production, these have been harmonized and a clarification is offered here: The figure of 3,081 tons per year is only that green hydrogen supplied to the chemical industry by the Ningdong demo. There is also 4 tons per day or up to 1,460 tons per year supplied to the HRSs to fuel vehicles. Thus, the total target is 4,541. This total target has been corrected in Activity 2.1.1, the project results framework, and Annex K.

-Grid power emissions are not included as all green hydrogen production is from isolated renewable energy-based power grids

-Transportation of hydrogen will be either via local pipelines or EV tube trucks and is not included in calculations. The transport of fossil fuels is also not included in the calculations to which green hydrogen transport is compared.

3. Beneficiaries: Comments in the gender section of this review sheet:

The gender target with regard to proportion of beneficiaries that are women has been increased from 20% or 8,000 women to 30% or 12,000 women. See also, Item 11 in Core Indicators table (Page 66 of ProDoc) The PRF (Annex C) and Annex N (expanded indicator annex including output indicators) have also been updated.

UNIDO Response 10/22/2024

1. We are treating the 450 MW wind of Phase Two in Shenyang as part of the core project activities (and thus as a contributor to the project's estimated direct greenhouse gas emission reductions and direct RE power generation capacity).

The Ningdong Phase Two Project, on the other hand, we are treating as an "associated project." The reasons for this different treatment are: (1) The Shenyang Phase Two Project is expected to be realized. Its involvement with the GEF project platform could likely accelerate its realization and ensure detailed monitoring and public promotion of results that would otherwise be absent. These well-documented results, in turn, may be leveraged to stimulate replication. A strong market for green petrochemicals in Europe makes this project financially viable. (2) Phase Two of the Ningdong demo is having problems in financial viability. Phase One became viable, because the involved company got a grid-connected PV project approved that will subsidize the green hydrogen project. For Phase Two, a similar model was initially pursued, but because the grid cannot accept as many grid-connected PV projects as are being pursued, this channel may not be realized and it is, thus, not clear whether Ningdong Phase Two will be realized. The project has thus not planned specific work with the demo. It could, through adaptive management, do so in the future to leverage its results (if the project is realized). Yet, the GEF project will not take specific steps to stimulate realization of this demo. We have added text in the activity descriptions to make these distinctions:

Under Activity 2.1.9 and about Ningdong Phase Two demo:

"At this point, it is unclear whether Ningdong Phase Two will be realized. The project will not put specific efforts into its realization, but, in the case it is realized, the project will provide support for detailed monitoring, viability assessment, and promotion of results so as to stimulate replication."

Under Activity 2.2.6:

"This demo is considered a part of core project activities. With more financial viability than Ningdong Phase Two (given Shenyang Phase Two links to strong green petrochemical export markets), the project is likely to be realized. By providing a positive platform, GEF project activities aim to speed up its realization and provide support for detailed monitoring, assessment of technical and financial viability, and wide dissemination/ promotion of findings so as to stimulate replication projects."

2-Data Entry in portal table: We have moved the 11.4 Mt direct emissions reduction indicator to 6.2. We have now reported the lifetime as 20 years. Thanks for pointing these out.

Apologies in that we had used a 20% causality factor for the reviewer's proposed bottom up methodology whereas the recommendation in the original comment was to use no more than 10%. Thus, we have revised the elaboration on the bottom up indirect (consequential) emissions reduction calculation in both the main text and in Annex V. In both cases, we first explain this "bottom up with causality factor approach" and use a causality factor of 10%.

At the same time, following presentation of the approach with 10% causality factor, we still retain reference to our original methodology (with much fewer replications but no causality factor) as we think it is valuable to the implementers and still valid given the latest GEF documentation. We explain that both methods yield similar results. In our view, recent GEF documentation (2022) in referencing prior documentation suggests this earlier methodology is still valid for GEF purposes. Further, we can see that both methodologies make sense. We believe, however, that the earlier methodology can give the implementation team more of a solid target for their technical assistance work, which includes not only policy, but support for preparation of replication plans. Such emissions were earlier termed "indirect" and later termed "consequential," probably because of confusion with the term "indirect" in situations such as this. We believe that some of the very targeted TA of the project (namely, work with specific cities on replication plans) can result in such emissions reduction with 100% causality. In contrast, a much broader approach to "bottom up" might consider "the universe" of expected future projects and thus a much lower causality factor for the GEF project.

GEF guidance on indirect/ consequential GHG ERs:

The reviewer has referenced the GEF RMF Guidelines, which we understand to be *Guidelines on the Implementation of the GEF-8 Results Measurement Framework*, dated June 30, 2022. Review of this document shows that it does not include specific methodology for GHG ER calculations but instead on page 19 and in its footnote 27 (pasted in entirety below) refers the reader to four documents, three of which we referenced in our initial response on the bottom-up indirect GHG ER estimation methodology. (The specific sentence on page 19 reads: "For specific guidelines, various methodologies and manuals are available²⁷.") Three of the four documents in the reference are dated, with the years of these dates being: 2008, 2011, 2013, and 2015. (And the fourth, we find, is from 2013.) Thus, they range from nine to 16 years old.

Here is the footnote (footnote 27) in the GEF RMF guidelines of 2022:

GEF, 2008, "Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects." GEF/C.33/Inf.18; GEF, 2015, "Guidelines for Greenhouse Gas Emissions Accounting and Reporting for GEF Projects." GEF/C.48/Inf.09.; ITDP. Undated. Manual for Calculating Greenhouse Gas Benefits GEF Transportation Projects; STAP, 2011, 2013. Calculating Greenhouse Gas Benefits of the GEF Energy Efficiency Projects. Version 1.0. Washington, DC: Global Environment Facility.

Here are our initial findings (as provided in an earlier response to the relevant comment) from three of these documents regarding the bottom up approach for indirect/ consequential GHG ERs. All support bottom up indirect emission reduction calculations that do not use a causality factor:

Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects (April 16, 2008): "The bottom-up approach for calculating indirect GHG reductions starts from the direct effects of the investments under a project, and assumes that a multiple of these effects is going to be achieved by replicating the project's investments." Mathematically, the GHG emission reductions are calculated with the same formula as in the case of direct effects, and then multiplied by the assumed factor of replication:

$CO_2 \text{ indirect BU} = CO_2 \text{ direct} * RF$; with

$CO_2 \text{ indirect BU}$ = emissions saved with investments after the project, as estimated using the bottom-up approach, in tonnes of CO_2 eq

RF = replication factor, i.e., how often will the project's investments be repeated during the 10 years after project implementation

$CO_2 \text{ direct}$ = estimate for direct and direct post-project emission reductions, in tonnes of CO_2 eq?

Manual for Calculating Greenhouse Gas Benefits of Global Environment Facility Transportation Projects (2011)

"The formula for estimating indirect impacts with the bottom up approach is:

$CO_2 \text{ indirect BU} = CO_2 \text{ direct} * RF$; with $CO_2 \text{ indirect BU}$ = emissions saved with investments after the project, as estimated using the Bottom-up approach, in tons of CO_2 eq, RF= replication factor, i.e., how often will the project's investments be repeated during the 10 years after project implementation, determined by expert and reflects the degree to which the project emphasizes activities that encourage replication

$CO_2 \text{ direct}$ = estimate for direct and direct post-project emission reductions, in tons of CO_2 eq?

Guidelines for Greenhouse Gas Emissions Accounting and Reporting for GEF Projects ? Findings and Recommendations of GEF Working Groups (2015):

This document refers to causality factor in conjunction with top-down approach, but not in conjunction with bottom-up approach. We have now also reviewed the fourth document:

Calculating Greenhouse Gas Benefits of the Global Environment Facility Energy Efficiency Projects (2013): The document only mentions causality factor with regard to top-down indirect emissions reduction estimates and not with regard to bottom-up emissions reduction estimates. It does note that certain types of TA activities may fit with bottom up calculations and some may not. We believe that the replication plan work of this project fits well with the bottom-up approach.

Agency has taken the conservative approach, and recalculated the core indicators, using 10% causality factor. Therefore, our final (indirect ERs) in Core indicator 6.2 stands at 4,566,555.6 (4.566Millions)tons CO2 equivalent. While direct remains the same 11.4Mt. Please see Annex V section 4 (paragraph highlighted violet).

Project teams (IA & PEE) remain committed to maximizing the project's indirect GHG emission reduction impact, aiming to reach more million tons of CO2 emission reductions (in an optimistic scenario) through effect replication efforts and well-structured plans during project implementation.

5.4 Risks

- a) **Is there a well-articulated assessment of risk to outcomes and identification of mitigation measures under each relevant risk category? Are mitigation measures clearly identified and realistic? Is there any omission?**
- b) **Is the rating provided reflecting the residual risk to the likely achievement of intended outcomes after accounting for the expected implementation of mitigation measures?**
- c) **Are environmental and social risks, impacts and management measures adequately assessed and rated and consistent with requirements set out in SD/PL/03?**

Secretariat comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

1. Thank you for the much welcome elaboration and clarification on this risk and related mitigation measures. This comment is cleared. During implementation, please consider linkage between the justification provided below and the tracking that will be performed by the project on the end-use of green hydrogen in dedicated sectors, as this is where the issue of decarbonization will become more apparent as going beyond a simple choice of switching between grey and green hydrogen. In some sectors, there may be also applications where the alternative is to not use certain petrochemicals applications for example (plastics and synthetic fertilizers being two of such examples). And this would be a case where there could be misalignments between hydrogen production and use, even green, and environmental targets.

2. Cleared

RR (6/27/2024):

1. Could you please elaborate on the potential risk entailed by engaging through this project with co-financiers and partners from the coal sector (as outlined in pilot descriptions) as they relate to project objectives (including reputational risks, misaligned incentives, carbon leakage) and how these risks are addressed/mitigated in project design?

2. We note that the project overall ESS risk is classified as low, and UNIDO attached the ESMP and pilot specific ESIA. However, the environmental and social risk of the Key Risk section in the Portal said moderate risk. Could you please make these risks ratings consistent and revise.

Agency Response

UNIDO Response 09/09/2024

1. Potential risks Elaboration:

Engaging with co-financiers and partners related to the coal sector, such as Guoneng in Ningdong, Ningxia, does present some risks vis-à-vis the project objective. The project design and overall trends in China mitigate these risks as follows:

1) Reputational risks: Individuals or articles in the press may criticize the project for links with coal industry and petrochemical industry partners. Yet, the fact of the matter is that it is quite common and important for green initiatives to engage the fossil fuel sector as one of the greatest leverage points for carbon emission reductions. In terms of green hydrogen, such engagement is particularly critical, because the top end use worldwide of hydrogen is petrochemicals. In fact, one of the most important players so far in green hydrogen in China is Sinopec, one of China's largest petrochemical companies. Companies using a lot of fossil fuels are cognizant of net zero targets of the nation and are working to address these targets. In order to address the reputation risk, the project in its communications, shall continually send the message of how green hydrogen is a means of lowering the carbon footprint of these major carbon emitters (and thus China's carbon emissions overall) and of helping them gradually transition to green production. The project's regular and transparent communications will mitigate the risk and will include reports available to stakeholders, which includes results of field checks of demo sites. (Reputational risks and mitigation measures has been added as a row towards the bottom of the ProDoc risk table.)

2) Misaligned interests: Partners from the fossil fuels sector and coal sector in particular may have interests that conflict with those of the project, such as a preference for coal-based hydrogen over green hydrogen. In terms of mitigation, the project will require clear contracts with involved companies that will require commitment to production and use of green hydrogen. The agreements will include penalties for non-compliance. Financial support will be provided to partners only if they meet green hydrogen targets. Ongoing engagement with stakeholders will also help all parties remain aligned with regard to the project objective. Further, the nation's net zero targets and policy direction are already aligning interests of the fossil fuels sector with those of the China Green Hydrogen Project. (Misaligned Interest risks and mitigation measures has been added as a row towards the bottom of the ProDoc risk table.)

3) Carbon leakage: This is the risk that the project's work along the GHIC may stimulate increased demand for coal-based hydrogen, the production of which has high carbon emissions; making it worse than other fossil fuel options (e.g. FCVs fueled with hydrogen made from coal have higher overall emissions than diesel fueled ICEVs). Carbon leakage of this sort has been added at the bottom of the project risk table. An explanation of mitigation measures is then offered in the table as follows:

The project, however, has taken strong efforts to avoid stimulating increased coal-based hydrogen production. All activities that address the GHIC will aim to put emphasis on green hydrogen. Finally,

the project will strongly leverage the Government of China's aims to reach net zero by 2060 and the positive response that is now being seen in industry to prepare for net zero requirements. As seen in Exhibit 2, after 2023 or so, a reduction in coal based hydrogen in China (made up for by increasing production of green hydrogen) is forecast, reflecting net zero targets, and suggesting that, in conjunction with the aforementioned project measures, the risk of substantial carbon leakage of this type from the project is low.?

Further, the project includes in Component 1 the development of comprehensive policies and technical roadmaps that prioritize green hydrogen while discouraging coal-based hydrogen production. This component ensures that regulatory frameworks and incentives are aligned with the project's green objectives. And, Component 3 is crucial for equipping stakeholders from the coal sector with the necessary knowledge and skills to transition to and support green hydrogen objectives, ensuring that all partners are capable of contributing to the project's goals effectively.

2. Overall ESS risks alignment:

Under "Risks to Project Implementation," in the ProDoc, the environmental and social risk rating has been adjusted to low. It has also been adjusted to low in the Key Risk section of the portal. In addition, overall project risk rating in the risk table has been adjust to low in both locations.

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

Secretariat comment at CEO Endorsement RequestN/A

Agency ResponseN/A

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

6.1 a) Is the project adequately aligned with Focal Area objectives, and/or the LDCF/SCCF strategy?

Secretariat comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

Cleared.

RR (6/27/2024):

1. Please see comments on project description regarding revisions suggested to ensure full alignment with GEF-8 CCM programming directions with regards to application of green hydrogen from renewables to hard to abate sectors only.

Agency Response

UNIDO Response 09/09/2024

1. GEF-8 CCM Programming:

The suggestions for ensuring full alignment with GEF-8 CCM programming directions have been adopted and articulated earlier in the document. End-use sectors will be hard-to-abate sectors only: (a) heavy-duty vehicles within the transport sector and (b) hard-to-abate industrial sectors, particularly chemicals. And, the project will focus solely on isolated grid renewable electricity powering electrolyzers in terms of hydrogen production.

Now, the section on 'Alignment with GEF Programming Priorities' has been enhanced with quotes from the GEF 8 programming directions document and explanation of how the project is aligned in terms of these hard-to-abate sectors, green hydrogen production method, potential for transformative impact on the economic systems of hard-to-abate sectors, and focus on interventions in the areas of technology, policy and regulation, and best practices.

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 comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

1. Cleared, thank you for useful addition. It seems in particular from the paragraph on alignment with chemical/ petrochemical sector plans and priorities, that there are already government plans for developing green hydrogen in this sector, but no specific targets. Liaising this back to the question on government targets in the project rationale vs available forecasts, it will be useful to clarify how the project can inform these processes.

RR (6/27/2024):

1. The section of the CEO ER only addresses China sectoral priorities dealing with fuel cell vehicles but not the chemicals industry sector, which is the other part of the value chain addressed by the project. Please include information on country priorities, policies, strategies and plans on the matter here - this information will also be relevant to clarify additionality and expected impact as noted in other sections of this review.

Agency Response

UNIDO Response 09/09/2024

1. The subsection on country priorities has now been expanded. It now includes a paragraph on ?alignment with China?s hydrogen plans and priorities overall? and, as requested in the comment, a paragraph on ?Alignment with petrochemical sector plans and priorities.? Both mention specific policy/ planning pieces and strategic directions.

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 comment at CEO Endorsement Request
N/A. - Biodiversity benefits not targeted by this project.

Agency Response
UNIDO Response 09/09/2024

Cleared from initial review

7 D. Policy Requirements
7.1 Are the Policy Requirement sections completed?

Secretariat comment at CEO Endorsement Request
Cleared

RR (6/27/2024):

Yes - please see sections below for dedicated comments on some of these requirements.

Agency Response
UNIDO Response 09/09/2024

Cleared from initial review

7.2 Is the Gender Action Plan uploaded?

Secretariat comment at CEO Endorsement Request
Cleared

RR (09/24/2024):

1. Cleared. The revision of the target and the proposed actions under the GAP, including more thorough industry-specific surveys, seem appropriate.

RR (6/27/2023):

Yes, uploaded as an annex. However :

1. The targets related to gender are currently reduced to 20% of women beneficiaries. Calling such a share a "20% gender parity" does not seem grammatically correct as gender parity would apply if 50% beneficiaries are met. This is also not a strict criteria, what matters per policy is gender equality. In other words, the target should be consistent with women representativity in the sector with an aim to increase the result from the baseline scenario. Hiring of gender specialist to promote adaptive management is welcome. This should be understood with an aim to increase the share of women beneficiaries and enhance women involvement and leadership in project activities. More details below (please see also comments directly in section above on mainstreaming in project outputs):

- the baseline, per only one data point provided which is per proponents experience (and perhaps lacks quantitative evidence support), is 10 to 20%. So if the target remains within this range, no impact is expected from the project, simply staying within the range of the baseline. Data provided in the gender analysis suggests that no single science, technology and engineering field in China has a representation of less than 25/30%. More data point on hydrogen industry would be needed therefore to deviate from this trend. Further, attendance to conference events are not a sufficient metric to reflect the share of women in the workforce. It also does not seem suited as a benchmark to determine women business owners subcontracted, which is also set at 20% with little explanations (unless there is another data source not mentioned in the report in connection with this dimension?).

- The ESMP mentions as risk on gender that "Lack of consideration of integrating gender aspects in project could result in unequal benefit distribution" ; but if the target is from the onset established as 20% of women beneficiaries, by default this would not be a risk but a given, that benefit distribution will be unequal.

> Both the baseline and the target should be consolidated, with a target showing a tentative enhancement compared to the baseline as a result of the purposeful interventions by the GEF project, which can be enabled by the recruitment in the PMU of a gender specialist as proposed by the proponents.

Agency Response

UNIDO Response 09/09/2024

1. *Gender Action Plan*: targets improved and wording rephrased.

- The term ?gender parity is removed form Gender Analysis and Action Plan Annex accordingly. As you note, it doesn?t fit unless we are going for 50%-50%, which we have not.

-We understand that the 20% gender target seems low to the GEFSec as compared to an anecdotal baseline mentioned of 10-20% and compared to figures for certain sectors from the article we reference. We explain more about the sectors and IHFCA's findings on gender below. A key point is that the auto industry typically has especially low representation of women, particularly in technical areas

Additionally, we have decided to incorporate a more challenging target of 30% women in various aspects of the project and work with a gender expert that the project will hire to achieve that goal. As a first start, the gender will be able to do deeper survey work, on the actual baseline, refine the targets as needed, and further create roadmap for clearly mainstreaming Gender throughout the project, as consistently reflected in associated activities.

Background on the baseline: First, it is important to clarify that there is currently no specific survey on the proportion of women in the hydrogen industry in China. The data provided by the China Association for Science and Technology (CAST) and referenced in the Gender Annex is somewhat limited, in that it does not include sectors as specific as automotive or hydrogen. And, as we note in the Gender Annex, sources come up with pretty different pictures. Hunan University comes up with a picture in which women are much more underrepresented in engineering than the CAST survey. From the annex:

?Research at Hunan University indicates a male to female ratio among engineering students much more skewed than the 25% finding offered above. Their results suggest a ratio ranging from 7.5:1 to 9:1, with certain specialized engineering programs having no female students at all.?

According to surveys conducted by IHFCA among its member units, the proportion of women in the hydrogen industry workforce generally ranges from 10% to 30%, with most women working in sales, marketing, and administrative departments. The proportion of women in R&D, manufacturing, and construction departments is typically below 5%. Based on IHFCA's experience in hosting large hydrogen-related conferences, the highest female participation rate is about 20%, with significantly lower rates in smaller and technically focused meetings. From IHFCA's experience in inviting experts in the hydrogen field, only about 5% or fewer of these experts are women. (Information in this paragraph has been used to elaborate discussion of the baseline in the Gender Assessment and Action Plan ? Annex M.)

Strategy for achieving a higher target: As noted, we have decide to raise the participation rate target to 30%. To ensure effective implementation of gender equality and the promotion of female participation, we will hire a Gender Expert to oversee and execute these activities. And, as noted, this expert will conduct a baseline survey and refine our gender targets accordingly. Additionally, we will collaborate with women's organizations in China, such as the All-China Women's Federation and NGO women's organizations, to supervise and assist in promoting women's participation in the green hydrogen industry, especially in talent cultivation, talent matching, and event participation. We will also use planned media channels to report on women's involvement in green hydrogen activities.

Comments on gender have been followed up on in response to other comments, such as in response to comment 50 just above, as well as the responses to comments 15, 37, and 45.

7.3 Is the stakeholder engagement plan uploaded?

Secretariat comment at CEO Endorsement Request
Cleared

RR (09/24/2024):

Thank you for the clarifications.

RR (6/27/2024):

Yes, under Annex P. List of stakeholders already engaged are already provided.

1. Please see comments in project rationale and description sections regarding questions on the content of these two documents as they relate to the project and following up on PIF stage comments on CSO and user-level engagement, and reflect as appropriate also in these documents.

Agency Response

UNIDO Response 09/09/2024

1. Stakeholder Engagement Plan: CSO Engagements reflected in revised SEP

Regarding the Stakeholder Engagement Plan, we have added a 'Notes' section at the end to address these two issues. The added text is as follows:

CSO Engagement: Exhibit 11 identifies some of these CSOs that will be involved in the project. IHFCA, the project executing agency, is clearly a key CSO that will be involved. China Society of Automotive Engineers (CSAE), will also be a key CSO to be involved. GHIAA (Global Hydrogen Industrial Association Alliance) is also an important partner in the CSO world. GHIAA has 21 members, which are, in turn, hydrogen associates from around the world. Thus, GHIAA will be an important partner in pursuing replication of the project demos in other countries. As part of the Gender Action Plan, the project will also be pursuing relationships with NGO women's groups. It will work to get feedback from them on how the project can achieve gender mainstreaming and promote green hydrogen through women's networks and in ways that are attractive to women.

User-Level Engagement: The project's activities aim for direct engagement at the user-level. With regard to end use sectors, there will be extensive outreach to both the vehicle and the hard-to-abate industrial sectors, particularly chemicals. The efforts will be through conferences and workshops as well as dissemination of information. This Stakeholder Engagement Plan has identified specific companies in the demo cities that are downstream on the GHIC and thus users of green hydrogen. Beyond the demo cities, outreach activities of the project will identify other users/ potential users of green hydrogen and reach out to them for conference attendance and dissemination of project information products. Social media and external media efforts will also involve these users. Finally,

the project website will have a discussion board that the users/ potential users of green hydrogen may participate in.?

7.4 Have the required applicable safeguards documents been uploaded?

Secretariat comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

Cleared. The annexes dealing with pilot description still appear on the portal but they include location specific ESIA relevant data, so this is fine.

RR (6/27/2024):

The ESMP and pilot specific ESIA have been uploaded.

1. However there seems to have been a mistake in the categorization of attachments, as all project annexes appear under this section - project annexes not pertaining to safeguards should be uploaded under a different category in order not to appear here. Thank you.

Agency Response

UNIDO Response 09/09/2024

We have corrected this error and uploaded the other annexes under the appropriate categories.

8 Annexes

Annex A: Financing Tables

8.1 GEF Financing Table and Focal Area Elements: 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 comment at CEO Endorsement Request

Cleared

RR (6/27/2024):

Yes.

Agency Response
UNIDO Response 09/09/2024

Cleared from initial review

Focal Area allocation?

Secretariat comment at CEO Endorsement Request
Cleared

RR (09/24/2024):

1. The PPG table is correct but now the Focal area elements table is incorrect, as it features a line with CCM-1-4 instead of CCM 1.3. Please also revise this one.

RR (6/27/2024):

1. The PPG sources funding from objectives CCM 1.1, CCM 1.2 and CCM 1.3 in line with programming directions. However, this is not reflected in the sourcing of funds for the project which is only based on CCM1.1. It would be relevant to reproduce the same repartition as for the PPG for the entirety of the project funding across the three focal area sub-objectives.

Agency Response
UNIDO Response 09/09/2024

The relevant CCM programming objectives are as follows:

- 1.1. Accelerate the efficient use of energy and materials.
- 1.2. Enable the transition to decarbonized power systems.
- 1.4. Promote innovation and technology transfer for sustainable.

The entry of only one objective was an error.

The same partition as for the PPG across these three objectives for each of the PPG, the full project GEF funding, and for full project co-financing has now been reproduced in the revised CER and in the portal as well.

LDCF under the principle of equitable access?

Secretariat comment at CEO Endorsement RequestN/A

Agency ResponseN/A
SCCF A (SIDS)?

Secretariat comment at CEO Endorsement RequestN/A

Agency ResponseN/A
SCCF B (Tech Transfer, Innovation, Private Sector)?

Secretariat comment at CEO Endorsement RequestN/A

Agency ResponseN/A
Focal Area Set Aside?

Secretariat comment at CEO Endorsement RequestN/A

Agency ResponseN/A
8.2 Project Preparation Grant (PPG)
a) Is the use of PPG attached in Annex: Status of Utilization of Project Preparation Grant (PPG) properly itemized according to the guidelines?

Secretariat comment at CEO Endorsement Request
Cleared

RR (09/24/2024):

Cleared.

RR (6/27/2024):

1. The activities below are not within the scope of eligible expenses for PPG per project and program cycle policies and guidelines, as they correspond to outputs under the remit of the agency: "Final project Document", "Finalization of Prodoc"; please list the eligible activities/expenditures (i.e. meetings, consultants, etc.) per the content included in Guidelines.

2. Further, "hiring national experts" is unclear - what was the purpose of the work of these experts?

Agency Response
UNIDO Response 09/09/2024

1. Scope of funds eligibility:

Annex D has been revised to further elaborate on eligible items under PPG funding. All items now included are eligible items. In particular, "final project document" has been replaced with "stakeholder consultations and development of detailed activities." And "finalization of ProDoc" has been replaced with "Preparation of project results framework, budget, work plan, and preparation of demo annexes."

2. National Experts Hiring Clarified

The national experts provided information on the baseline situation, baseline demo projects, and barriers, as well as providing suggestions on interventions to address the barriers. They participated in discussions and reviewed documents (demo feasibility studies and draft project design) and provided suggestions. Each did this from the angle of his or her specific expertise:

1. Hydrogen Production Expert
2. Fuel Cell Technology Applications Consultant
3. Policy and FCV Expert

Their activities, in briefer form, along with the three experts' areas of expertise, have been incorporated into the relevant line item of Annex D's PPG utilization table. TORs detailing scope of work (deliverables) of each expert is available for sharing should GEFSec require more granular details.

8.3 Source of Funds

Does the sources of funds table match with the amounts in the OFP's LOE?

Note: the table only captures sources of funds from the country's STAR allocation

Secretariat comment at CEO Endorsement Request
Cleared

RR (6/27/2024):

Yes, 17.767 total from country CCM STAR allocation noted in OFP endorsement letter.

Agency Response

UNIDO Response 09/09/2024

Consistent with initial submission

8.4 Confirmed co-financing for the project, by name and type: Are the amounts, sources, and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines?

e.g. Have letters of co-finance been submitted, correctly classified as investment mobilized or in-

kind/recurring expenditures? If investment mobilized: is there an explanation below the table to describe the nature of co-finance? If letters are not in English, is a translation provided?

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

Agency opted for using the private sector co-financing letters.

The letters are now consistent with GEF guidelines. They now provide sufficient granularity to understand what this significant financing goes to. PM notes in particular the recategorization as investment of amounts that were previously accounted for as in-kind. It is noted that the letter for Ningdong will be provided during implementation.

For reference for policy review - the letter for Dalian in-kind co-financing appears in chinese - however the translated letter is provided above as justification for the investment and provides consistent numbers for both in-kind and investment.

RR (09/24/2024):

The co-financing letters provided are still problematic. The use of the stamp is fine, this part of the comment is cleared.

1. Dalian co-financing refers to cash and in-kind but does not specify how much is in-kind and how much is cash. It also does not clarify the time period of the co-financing as it relates to the time period of the project. It also does not clarify how it contributes to project components and specific activities.
2. Similarly, the Lianing co-financing specifies how much is cash and in-kind, but also does not clarify time period of co-financing and how it contributes to specific project activities.
3. Same issue for Ningxia autonomous region co-financing, with the additional issue that the amount considered as in-kind is very high - only the portion used specifically for the purpose of the project should be accounted for as co-financing. The order of magnitude of the Lianing in-kind co-financing is more realistic for an in-kind contribution.
4. The sample co-financing letters provided by companies directly are more aligned with GEF guidelines, as they come from the source and specify what activities and purposes these will serve. Although even then for all of these co-financing letters, there is a mismatch between the amounts reported, and those reported in the dedicated budgets in the annexes presenting the project demos. There is also a mismatch between the amounts presented in the annexes as representing the cost of the project, and the sum of co-financing and GEF-financing, which is higher (for example with the Ningdong case again, with a 1M\$ difference). The letter dealing with the Dalian and Senhyang pilots also miss the time duration of these investments as they relate to the project time period. Also, The

Dalian-related letter features in-kind amounts which are too high, due to a miscategorization - some of the examples provided under in-kind (such as FCV trucks) would rather fit as equity - and even then, one would have to clarify the extent to which the entirety of such an investment is really dedicated to the project or if it also serves another purpose. This is valid for both in-kind and investment co-financing - the agency should only report its best estimate of the portion that can reasonably be attributed to be contributing to the project (both in terms of timeline, and in terms of scope of activities), and per clarifications provided in the letters, this is not the case as the reported amounts are declared to correspond to a bigger scope. And the clarification of what exactly these amounts of financing correspond to in terms of the project and its activities, cannot be found anywhere except for aggregated amounts. Given the substantial total co-financing, this is problematic as it constitutes insufficient clarity on what this high figure covers and on its adherence with GEF guidelines.

5. In summary, would suggest the agency to revert back with revised co-financing letters, with figures corresponding only to the amounts that can reasonably be assessed as a best estimate from the agency of the portion contributing to the project and with appropriate justification of their correspondance with project activities (e.g. no full amount should be reported if the scope of the expense is broader than the project) and with implementation timeline (e.g. no full amount should be reported if co-financing started before the project implementation period), and reported in the appropriate categories (e.g. avoiding as much as possible the use of in-kind for expenses that are not labor-related). Based on agency clarifications on chinese context related to guarantee and authority elements enabled by securing letters at the administrative level, these letters may come either from municipalities or from enterprises as deemed most adequate by the agency to limit transaction costs of obtaining letters, but should adhere with the above guidance. Upon submission, please ensure amounts of confirmed financing are made consistent between portal and letters.

RR (6/27/2024):

1. Per GEF co-financing policy and guidelines, the co-financing letters provided should come directly from the source of the co-financing. Therefore the three co-financing letters coming from the industrial park authorities for the Dalian, Ningdong and Shenyang municipality that are not consistent with the requirements and should be replaced by the granular level co-financing letters from the participating companies themselves.

2. Noting that the amount of companies that are expected to contribute to co-financing is per annexes provided very large, the most adequate solution, as a pragmatic option to reduce the amount of letters, would be to prioritize obtaining the co-financing letters only for the most strategic expenses, while keeping in mind in case time is too short that it will also be possible throughout project implementation to record materialized co-financing on the GEF portal and at MTR and TE stage.

3. Please see comments above regarding repartition of expenses between GEF and co-financing, which may affect the amounts reported in revised co-financing letters.

4. Please ensure the revised co-financing letters clearly (i) separate the cash and in-kind contributions, (ii) explicit what these contributions correspond to and entail - what type of activities

and costs, to contribute to what components, considering in an updated estimated the actual amount that the Agency (with the help of the co-financier if possible) think will really go to the project considering the timeframe of both the co-finance and the GEF project, and (iii) systematically include the official signature, which is currently missing from some letters.

Agency Response

UNIDO Response 09/09/2024

1. Co-financing Letters from Companies:

The Project is now providing additional co-financing letters from three companies, each being the leading company of the demo in its respective city. The Project would like to maintain its original three co-financing letters from municipal or provincial governments, however, and provide these three new ones as more granular evidence that the government commitment is backed up by company commitment. The reason the original three co-financing letters are maintained is that, in China, for demos of this sort, the government is the responsible organizing party (guarantor) and their commitment to mobilize the business sector is considered more reliable. Indeed, if one company co-financier falls through, if there is a government commitment, the government can be depended upon to find a replacement. Without this government commitment, the co-financing might simply fall through with no easy way to replace it. This benefit of government co-financing commitment has, indeed, already been seen: Since the PIF stage, in Shenyang, the original main company exited and a new state-owned enterprise was found by the local government to take its place. The three companies for which co-financing letters have been added are:

- (1) **Guochuang Hydrogen Energy Technology Co.** responsible for fuel cell R&D, distributed power generation with green hydrogen from rooftop PV for the Dalian demo;
- (2) **Huadian Liaoning Energy Development Co., Ltd.** RE power generation, green hydrogen production, and green chemicals production for the Shenyang demo;
- (3) **CHN Energy (Ningxia Ningdong) Green Hydrogen Energy Co., Ltd.** RE power generation and green hydrogen production for the Ningdong demo. The original three local or provincial government entities for which the co-financing letters are maintained (and these letters being those upon which the reported co-financing is still based) are: (1) City of Dalian Municipal Finance Bureau, (2) Ningxia Hui Autonomous Region Finance Bureau, and (3) Liaoning Province Finance Bureau. The letters, in turn, guarantee the commitment of lower levels of government: (i) Dalian Free Trade Zone, (ii) Ningdong Energy Chemical Industry Base Management Committee, (iii) Shenyang City. The higher level commitment (at the municipal or provincial level) ensures the commitment of the lower levels (industrial or trade zones and municipality).

2. Letters Prioritized from Bigger Companies:

Please see response to item directly above (no.1). Three company co-financing letters have been added as evidence of the company commitment behind the government commitment letters. In each case, the company chosen is the one that will invest the most in the respective city's demo. Per the comment, the project team will indeed record co-financing contributions from other companies; and these can be used to update materialized co-financing on the GEF portal and to inform the MTR and TE reviewers of their reports.

3. Expenses repartition between GEF and co-financing

Some work has been done in repartitioning expenses between GEF and co-financing to ensure that all GEF funds are used on activities clearly linked to green hydrogen and hydrogen in general. (Please see details in response to comment 36.) These changes are reflected in the demo city annexes, as well as in the co-financing letters from the leading company in each city and from IHFCA and UNIDO.

4. Revised Co-financing Letters

Please see the three company co-financing letters that have been added. These (i) clearly distinguish between cash and in-kind contributions and (ii) specifically state the types of activities and which components are supported. As noted above, however, the Project would like to continue using the municipal and provincial co-financing letters as the main basis of co-financing, because in China government commitment will ensure the success of the demos and, in some cases, government (by virtue of this commitment) may need to take the lead in replacing some companies that are not able to deliver according to plan. Thus, the newly added company co-financing letters are presented as evidence that the government commitment is indeed backed by companies that will be making the investments committed to. (iii) As for the "official signature," in China the entity stamp is considered to be what makes a letter official. The stamps are kept locked up and access is limited. Finally, the IHFCA and UNIDO co-financing letters have been re-written to (i) clearly distinguish between cash and in-kind contributions and (ii) specifically state the types of activities and costs and which components are supported.

UNIDO Response 10/22/2024

1. Dalian letter revised and aligned with GEF expectations.
2. Liaoning (Shenyang Province Demo Site) letter revised and aligned with GEF expectations.
3. Ningxia Hui (Ningdong Province Demo site) letter omitted - to be shared in the portal during project implementation.
4. It is good to the co-financing letters sample is fine and align with GEF guidelines. For clarity, the annexes (J, K and L) contain detailed information of co-financing funds to the project. While the co-financing letters provided is given the requested during first round of review ? providing letters at

company levels. Naturally the company level amounts is less than total amounts in demo cities annexes (J, K and L).

Dalian and Shenyang pilots - This is correct, we have now reflected in new co-financing letters.

Dalian mis-categorization ?Project team confirms the total funding of US\$68,734,000, of which: US\$67,334,000 will be provided as cash contribution; US\$1,400,000 will be provided as an in-kind contribution.

The agency (UNIDO) confirms to report on funds (cash or kind) commitment that are attributed the project. This is also confirmed from MOF China. Clarification has been mentioned in previous letter and more specificity provided in newer versions. It has been specified that all co-financing amounts has been dedicated to the objectives mentioned in project document.

5. Agreed. Agency and PEE reverted to partners, and share with as much available details in revised co-financing letters.

Broader scope and Timeline: Confirmed, no full amount can or will be reported if the scope of the expense is broader than the project. Timeline now reflected in revised letters. **Note:** Investment implementation period (timeline) is taken from the date of PIF approval (June 29, 2023) to project envisaged closure (2029).

Annex B: Endorsements

8.5 a) If ? and only if - this is a global or regional project for which not all country-based interventions were known at PIF stage and, therefore, not all LOEs provided:

Has the project been endorsed by the GEF OFP/s of all GEF eligible participating countries and has the OFP name and position been checked against the GEF database at the time of submission?

Secretariat comment at CEO Endorsement Request N/A

Agency Response

N/A

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

Secretariat comment at CEO Endorsement Request

Cleared

RR (6/27/2024):

Yes.

Agency Response

UNIDO Response 09/09/2024

Cleared during initial review

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

Secretariat comment at CEO Endorsement Request

Cleared

RR (6/27/2024):

Yes (see Source of funds section)

Agency Response

UNIDO Response 09/09/2024

Cleared during initial review

Annex C: Project Results Framework

8.6 a) Have the GEF core indicators been included?

b) Have SMART indicators been used; are means of verification well thought out; do the targets correspond/are appropriate in view of total project financing (too high? Too low?)

c) Are all relevant indicators sex disaggregated?

d) Is the Project Results Framework included in the Project Document pasted in the Template?

Secretariat comment at CEO Endorsement Request

Cleared

RR (10/25/2024):

a and b) cleared - this is the direct impact during project period only

RR (09/24/2024):

c) and d) cleared.

a) and b) Please see follow up comments in the core-indicator section and reflect here accordingly.

RR (6/27/2024):

a) renewable energy installed is not mentioned when the pilots mention solar and wind generation - would be relevant to include as this is also a core indicator. Also, the GHG data should be updated (see review section on core indicator calculations above)

b) GHG targets are too high in view of project financing and accounting guidelines and should be revised (see dedicated section)

c) done for the third indicator of the RMF. But some of the indicators mentioned in the gender action plan (e.g. women-owned business involved in subcontracting) are not mentioned.

d) yes - cleared.

Agency Response

UNIDO Response 09/09/2024

a) Have GEF core indicators been included?

As in the response to comment 43, RE has been added as a core indicator and also in the project results framework as a fifth indicator for Outcome 2, the demo outcome.

Please see response to comment 44 regarding GHG emission reduction calculations. The 114 million tons entry was a typo and has been corrected to be 11.4 M tons. There is also an explanation in the response to comment 44 about the bottom up methodology and other possible factors raised in the comment, such as the possibility of leakages due to the project stimulating increased production of coal-based hydrogen, etc.

Core Indicators Table and some of the text after it (Pages 67-68 at the time this response is being drafted) Project Results Framework, Annex C (Pages 77 and 83).

b. GHG Targets:

Please see response to comment #44 (*Core Indicators: 2. GHG ERs*). There was a typo in the GHG emissions reduction calculation and it has been corrected.

Core Indicators Table and some of the text after it (Pages 67-68) Project Results Framework, Annex C (Page 77). Annex V on GHG Emissions Reduction ?additional explanation at the end of the annex.

c. RMF Indicators on Gender Involvement, Women-owned businesses:

Thank you for this good point. We agree that it will be useful to incorporate the gender indicators from the gender action plan directly into the Project Results Framework, as otherwise, there may be less unified effort to hit the targets in the gender action plan. Yet, many of the indicators are more ?output-like? than ?outcome-like?, so will be incorporated into the extended Project Results Framework (Annex N), which has output-level indicators, rather than the objective and outcome

level only Project Results Framework of Annex C. Also, some of the gender targets cut across all outcomes or all outputs in an outcome (even though they are output-like), so those indicators will be given a special section or sections of their own within the indicator table. Such sections will be placed after all the other outcome sections for those that cut across all outcomes and at the end of the respective outcome section when the indicator cuts across more than one output but within the same outcome. Here are the key points about what was preexisting in these two annexes with regard to gender indicators and what has been added and where:

-The sex disaggregated objective and outcome level indicators that were already included in the prior draft of the ProDoc (and which are in both Annex C and Annex N) include one indicator at the objective level (total project beneficiaries) and one at the outcome level (conference attendees improving test scores by a certain amount). Objective level and outcome level indicators, such as the foregoing, are typically more challenging to achieve than simple output level indicators, such as number of attendees at a conference.

-The output level indicators that were already sex disaggregated in the prior draft of the ProDoc and can be found in Annex N are: (i) Total number of attendees at ?comprehensive? conference-based capacity building and experience sharing events held (% women, number of women), in aggregate [Output 3.1], (ii) Total attendees at Project?s FCV side-events (% women, number of women) in aggregate [Output 3.2], (iii) Total attendees at international side-events (% women, number of women) in aggregate [Output 3.2], (iv) Total attendees at problem solving events (% women, number of women) in aggregate [Output 3.3], (v) Number of experts signed up and listed on the Hydrogen Human Talent Platform (percent women, number of women) [Output 3.5].

-Topics/ areas on which indicators are added (with location in Annex N indicated in brackets) are: (i) Liaison and idea generation with women?s organizations [cross-project section at end of indicator table]. (ii) Prioritization of women contractors in procurement [cross-project section at end of indicator table]. (iii) Award for outstanding women in hydrogen [cross-project section at end of indicator table]. (iv) Development of project promotional materials that focus on women as the target of awareness raising and/or that show women participants during the project [cross-Outcome 4 section at end of Outcome 4?s output indicators]. (v) Encouragement of women to study hydrogen related topics and development of training materials attractive to women [addition to indicators for Output 3.4]. (vi) Encouragement of women to be involved in project?s entrepreneur training [addition to indicators for Output 1.8b] (vii) Outreach to women entrepreneurs to participate in competition to win grants from project innovation fund [addition to indicators for Output 2.4].

UNIDO Response 10/22/2024

a. The renewable energy installed (core indicator 6.4), which is 720 MW), has now been added to the core indicator table in the ProDoc. It has also be added in the online portal-core indicator template. Previously it had been added to and remains in the Project Results Framework (Annex C) as one of the indicators under Outcome 2.

b. There was a typo in an earlier version of the core indicators in which the direct GHG ERs were estimated as 114 million tons CO2 instead of 11.4 million tons CO2. That core indicator has now been corrected to be 11.4 M t CO2.

Annex E: Project map and coordinates

8.7 Have geographic coordinates of project locations been entered in the dedicated table? Are relevant illustrative maps included?

Secretariat comment at CEO Endorsement Request

Cleared

RR (09/24/2024):

Cleared.

RR (6/27/2024):

1. Geographic coordinates are entered with illustrative maps, however the table only reflects the coordinates for Dalian and Ningdong - could you please add the Shenyang coordinates in the table as well?

Agency Response

UNIDO Response 09/09/2024

1. Geo- Coordinates:

Apologies. We had these coordinates in our CER file, but due to technical issues from portal not all was reflected. We will upload again with the required coordinates for each city. The ESMP document also includes these coordinates for each city.

For quick access, please see the coordinates in line with GEF new coordinates format.

Location Name	Latitude	Longitude	Location/Activity Description
Ningdong	38.1644000?	106.5862000?	Ningxia Province, Demo site
Dalian	38.9140000?	121.6147000?	Liaoning Province, Demo site
Shenyang	41.8048000?	123.4330000?	Liaoning Province, Demo site

Also added to ProDocx

Annex G: GEF Budget template

8.8 a) Is the GEF budget template attached and appropriately filled out incl. items such as the executing partner for each budget line?

b) Are the activities / expenditures reasonably and accurately charged to the three identified sources (Components, M&E and PMC)?

c) Are TORs for key project staff funded by GEF grant and/or co-finance attached?

Secretariat comment at CEO Endorsement Request

Cleared

RR (11/4/2024):

2. Addressed - this was a typo and the amounts now all match and are charged to PMC only.

RR (11/1/2024):

1. Addressed

2. There seems to be an issue with the totals? Now all the amounts appear under the PMC column, but although the total reads as 760,000, which corresponds to the unit cost noted in the first few columns, the sum of the lines only gives 360,000\$, so that there are 400,000 missing. These are from the chief technical advisor (charged 40,000 instead of 400,000), and project audit costs and miscellaneous (20,000 each). Thank you for making this final clarification for consistency.

RR (10/25/2024):

1. Only one table is now visible. But under budget annexes, there are two documents that do not belong : "Responses to GEFSec Comments - UNIDO GH2" and "China Green Hydrogen - ProDoc -highlighted 20240906" > please recategorize these documents under their appropriate label so that they do not appear under the budget annex on the portal

2. The problem seems to be that the template does not follow fully GEF standards : normally, the PMC costs would only appear in the PMC column. Whereas here in the budget, they appear as charged to the components, but in a "PMC" section. Could you please revise the table so that these costs are charged only to the PMC and appear on the final "PMC" column instead (it is the column that is just before the total)?

RR (09/24/2024):

a) The table is now readable and includes corresponding executing partners. Based on this, please see follow up comments:

1. There are two tables: one with bigger font than the other. The first one is 50 pages long, while the second one is shorter (and readable). Providing that the second accurately summarizes the first, please remove the first from the portal project document to avoid confusion and facilitate the reading.

2. The budget table does not charge any budget item to PMC ? for instance, the positions that in theory would belong to the PMU and charged to PMC (i.e. Project Manager, Chief Technical Advisor) are charged to the Project's components - which is not in line with guidelines. We may be missing something because in absence of these charges to PMC, still the total for this column in the table is \$760,000. Thank you for clarifying.

RR (6/27/2024):

a) The budget table in the CEO Endorsement Portal view is not readable (characters are too small)? please amend for readability. When resubmitted, we may provide further comments as appropriate.

Also, executing partners are not listed for each budget line (maybe the budget table was cropped?). Please include in the revision.

b) yes - cleared

c) yes an attachment provides the TOR for project execution entity - cleared

Agency Response

UNIDO Response 09/09/2024

a) The budget table in the CEO Endorsement Portal

We have now made the appropriate technical adjustments; and the characters of the budget table are now larger and readable in the portal. As noted in the Annex G/ budget table comments in the CER: "This spreadsheet includes the recommended GEF template in the first sheet. Detailed breakdowns, however, are provided in subsequent sheets, which list all activities and show responsible party for each activity.? Please note that there have also been some revisions to this document since the earlier submissions to fit changes to the activities in the ProDoc.

UNIDO Response 10/30/2024

1. The two documents were deleted from the portal under budget and resaved appropriately.

- Responses to GEFSec Comments - UNIDO GH2
- China Green Hydrogen - ProDoc -highlighted 20240906

2. Template is now placed in line with GEF standards reflecting PMC costs in column only; having only eligible costs charged on PMC as per GEF financing policies.

UNIDO Response 10/30/2024

2. Typos has been corrected on last page in budget summary to A (current page) from B (typo)

	2.4.2 Innovation grant fund: setting up and operating fund					0	38,350	38,350		0		0	38,350			
	2.4.4 Innovation grant fund: selection of winning candidates and disbursement of funds					0	750,000	750,000		0		0	750,000			
	3.4.1 Training materials or textbooks for 4-6 different GHIC courses					0		0		4,850		0	4,850			
	4.2.3 Series of project highlight videos for global-scale promotion					0		0		0		33,000	33,000			
	4.6.1 Additional awareness raising programs to address needs identified in Years 2,3,4,5					0		0		0		18,000	18,000			
	Sub-total Contractual Services – PEE					129,700	1,801,125	807,900	807,900	0	4,850	0	51,000	2,664,875	0	0
Travel	Travel to meeting project site, workshops etc.					100,000		0				0	100,000			
	Sub-total Travel					0	100,000	0	0	50,000	50,000	0	0	100,000	0	0
Office supplies	Office supplies, rent, equipment, etc.					0		0	50,000	50,000		0	50,000			
	Sub-total Office supplies					0	0	0	50,000	50,000	0	0	50,000	0	0	
M&E	5.1.1 Carrying out all periodic M&E assessment and reporting, including assessment of PRF indicators														50,000	
	5.1.2 Ongoing project monitoring of timely, efficient, and effective implementation of all activities, PEE...														50,000	
	5.2.1 Mid-Term Review														150,000	
	5.2.2 Terminal Evaluation														150,000	
	Sub-total M&E														400,000	
Staffing (Consultants), Audit and Miscellaneous	Project Manager	1	40,000	40,000		0		0	0	0		0			40,000	
	Industry Specialists & Experts	7	20,000	140,000	0	0		0	0	0		0			140,000	
	Communications and Gender Specialists & Experts	2	20,000	40,000		0		0	0	0		0			40,000	
	Standards Expert	2	10,000	20,000		0		0	0	0		0			20,000	
	Chief Technical Advisor	1	400,000	400,000		0		0	0	0		0			400,000	
	International Commutation Expert	1	30,000	30,000		0		0	0	0		0			30,000	
	Environmental and Safety Specialist	1	30,000	30,000		0		0	0	0		0			30,000	
	Project Audit Costs			30,000											30,000	
	Miscellaneous			30,000											30,000	
	Sub-total Consultants (PMC)							0	0	0					760,000	
TOTAL YEARS 1-5						140,000	3,190,000	950,000	10,750,000	350,000	600,000	37,000	300,000	5,133,400	400,000	760,000
Outcome						3,190,000	1,075,000	600,000			300,000					

	2.4.2 Innovation grant fund: setting up and operating fund					0	38,350	38,350		0		0	38,350			
	2.4.4 Innovation grant fund: selection of winning candidates and disbursement of funds					0	750,000	750,000		0		0	750,000			
	3.4.1 Training materials or textbooks for 4-6 different GHIC courses					0		0		4,850		0	4,850			
	4.2.3 Series of project highlight videos for global-scale promotion					0		0		0		33,000	33,000			
	4.6.1 Additional awareness raising programs to address needs identified in Years 2,3,4,5					0		0		0		18,000	18,000			
	Sub-total Contractual Services – PEE					129,700	1,801,125	807,900	807,900	0	4,850	0	51,000	2,664,875	0	0
Travel	Travel to meeting project site, workshops etc.					100,000		0				0	100,000			
	Sub-total Travel					0	100,000	0	0	50,000	50,000	0	0	145,000	0	0
Office supplies	Office supplies, rent, equipment, etc.					0		0	50,000	50,000		0	50,000			
	Sub-total Office supplies					0	0	0	0	50,000	50,000	0	0	50,000	0	0
M&E	5.1.1 Carrying out all periodic M&E assessment and reporting, including assessment of PRF indicators														50,000	
	5.1.2 Ongoing project monitoring of timely, efficient, and effective implementation of all activities, PEE...														50,000	
	5.2.1 Mid-Term Review														150,000	
	5.2.2 Terminal Evaluation														150,000	
	Sub-total M&E														400,000	
Staffing (Consultants), Audit and Miscellaneous	Project Manager	1	40,000	40,000		0		0	0	0		0			40,000	
	Industry Specialists & Experts	7	20,000	140,000	0	0		0	0	0		0			140,000	
	Communications and Gender Specialists & Experts	2	20,000	40,000		0		0	0	0		0			40,000	
	Standards Expert	2	10,000	20,000		0		0	0	0		0			20,000	
	Chief Technical Advisor	1	400,000	400,000		0		0	0	0		0			400,000	
	International Communication Expert	1	30,000	30,000		0		0	0	0		0			30,000	
	Environmental and Safety Specialist	1	30,000	30,000		0		0	0	0		0			30,000	
	Project Audit Costs			30,000												
	Miscellaneous			30,000												
	Sub-total Consultants (PMC)							0	0	0	0	0	0	0	760,000	
TOTAL YEARS 1-5						140,000	3,190,000	950,000	10,750,000	350,000	600,000	37,000	300,000	5,133,400	400,000	760,000
Outcome						3,190,000	0	1,075,000	0	600,000	0	300,000	0	0	0	0

Annex H: NGI Relevant Annexes

8.9 a) Does the project provide sufficient detail (indicative term sheet) to assess the following criteria: co-financing ratios, financial terms and conditions, and financial additionality? If not, please provide comments.

b) Does the project provide a detailed reflow table to assess the project capacity of generating reflows? If not, please provide comments.

c) Is the Agency eligible to administer concessional finance? If not, please provide comments.

Secretariat comment at CEO Endorsement Request N/A.

Agency Response N/A

Additional Annexes

9. GEFSEC DECISION

9.1. GEFSEC Recommendation

Is the project recommended for approval

Secretariat comment at CEO Endorsement Request

Cleared

RR (11/4/2024):

Last formatting issues are resolved, project is recommended for approval.

RR (11/4/2024):

All comments have been addressed satisfactorily and the project is ready to be recommended, pending last formatting issues (summary, core indicator justification)

RR (11/1/2024):

Please see last issue with budget

RR (10/25/2024):

All comments addressed except for core indicators and budget. Thank you for resubmitting as soon as possible.

RR (09/24/2024):

Most comments have been adequately addressed and the project document is close to clearance. Main pending revisions pending are related to co-financing (including repartition of expenses with GEF contribution and adherence of letters with guidelines per project activities), core indicators, and budget. We expect a swift conclusion of the review on this basis.

RR (6/27/2024)

The project is in good shape from a technical perspective but not yet recommended for approval. Thank you for addressing comments and resubmitting. Please ensure revisions appear highlighted in the CEO ER document for ease of reference.

9.2 Additional Comments to be considered by the Agency during the inception and implementation phase

Secretariat comment at CEO Endorsement Request

RR (11/1/2024)

See elements provided above in the review sheet - agency has already committed to take some of the comments into account in more details during inception and implementation phase, there are no additional comment than these for now.

9.3 Review Dates

	CEO Approval	Response to Secretariat comments
First Review	6/27/2024	9/9/2024
Additional Review (as necessary)	9/24/2024	
Additional Review (as necessary)	10/25/2024	
Additional Review (as necessary)	11/1/2024	
Additional Review (as necessary)	11/4/2024	