



Facilitating Cleaner and Energy Efficient Phosphate Chemicals Industry in China (PhosChemEE) Project

Review PIF and Make a recommendation

Basic project information

GEF ID

10722

Countries

China

Project Name

Facilitating Cleaner and Energy Efficient Phosphate Chemicals Industry in China (PhosChemEE) Project

Agencies

UNDP

Date received by PM

9/29/2020

Review completed by PM

Program Manager

Ming Yang

Focal Area

Climate Change

Project Type

FSP

PIF

Part I – Project Information

Focal area elements

1. Is the project/program aligned with the relevant GEF focal area elements in Table A, as defined by the GEF 7 Programming Directions?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes. The project is aligned with CCM-1-3: Promote innovation and technology transfer for sustainable energy breakthroughs for accelerating energy efficiency adoption.

Agency Response

Indicative project/program description summary

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

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time.

1). Please split the total budget into smaller pieces and allocate them to match each of the project outputs. In particular, for the technology demonstrations in Component 1 (Installed and operational green, energy efficient low carbon technology application demos in phosrock mining and refining in Weng'an, Guizhou, Jinning, Yunnan, and Mabian and Leibo counties, Sichuan.), Component 2 (Installed and operational green, energy efficient low carbon technology application demos in phosphate chemicals production.), and Component 3 (Installed and operational green and low carbon waste management technology application demos in the phosphate chemicals industry.), please indicate capacities of technologies to be installed and capital investment for each of the technology capacities.

2). Co-financing amount in Table B for the project components are not sufficient to achieve the targeted demonstration facilities and the project goal. Please increase the co-financing ratio to 1:10. More comments are given at the box below regarding co-financing, and more comments on the text of the PIF regarding the components are provided in the following boxes.

3). Please indicate the M&E budget for the project.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response to comment 10/1/202 MY:

Comment:

1). Please split the total budget into smaller pieces and allocate them to match each of the project outputs. In particular, for the technology demonstrations in Component 1 (Installed and operational green, energy efficient low carbon technology application demos in phosrock mining and refining in Weng'an, Guizhou, Jinning, Yunnan, and Mabian and Leibo counties, Sichuan.), Component 2 (Installed and operational green, energy efficient low carbon technology application demos in phosphate chemicals production.), and Component 3 (Installed and operational green and low carbon waste management technology application demos in the phosphate chemicals industry.), please indicate capacities of technologies to be installed and capital investment for each of the technology capacities.

Response:

The breakdown of the estimated budget for the investment components of the project is now shown in Part I, Sec. B of the revised PIF. The preliminary identified indicative green, energy efficient low carbon technologies that will be considered in each investment sub-component includes:

Component 1:

Phosphate mining and refining: (1) Improved phosrock transportation from mine site to refining section by phosrock conveying (5 million tons/year) and phosrock slurry pumping and pipeline transportation (5 million tons/year); (2), XRT sorting (2 million tons/year); and, (3) Biological phosphate fertilizer from phosrock refining tailings (1 million tons/year). As to the corresponding capital investments: (1) phosrock transportation, depending on the terrain complexity for raw phosrock conveying and phosrock slurry pumping, is estimated at US\$ 3M – 4.5M/mile for a 5 million tons/year transfer rate; (2) XRT sorting system will cost about US\$ 4.5M – 7.5M for a 2 million tons/year processing rate; and, (3) a bio-phosphate fertilizer production plant cost about US\$ 3M – 4.5M for a 1 million tons/year production rate.

Component 2:

Phosphate chemicals production: (1) Process optimization and the improved heat recovery in thermal phosphoric acid production; (2) Medium pressure steam production using tail gas (CO) from the electric furnace used in yellow phosphorus production; and (3) Improved wet-process phosphoric acid production. Both for large companies and SMEs that produce phosphate chemicals, green and low carbon technologies, and practices (e.g., waste heat recovery, application of energy efficient electric motors and equipment, distributed control systems, energy management systems, etc.) that will improve and optimize their production operations

and processes for improved productivity, cleaner production and energy efficiency will be demonstrated. The specific demonstrations will be designed to fit the appropriate partner entities that will be able to showcase cost-effective implementation of the green low carbon technologies, generate high energy savings and bring about high GHG emission reductions.

Component 3:

PCI waste management: (1) Improved phosphogypsum pre-treatment (200,000 tons/year); (2) improved production of α high-strength gypsum that is used as building material and molding compound, replacing silicate cement (200,000 tons/year); and, (3) improved production of β gypsum that is commonly used as building material (200,000 tons/year). Regarding the corresponding capital investment for the stated production rates: (1) Improved phosphogypsum pre-treatment is estimated at US\$ 1.5M; (2) Improved α high-strength gypsum production is estimated at US\$ 7.5M; and (3) improved β gypsum production is about US\$ 3M.

At present, some of the partner PCI companies are in the process of planning and implementing the above technologies at small scale. The proposed project intends to expand and improve these baseline initiatives on a demonstration basis. Other potential green, energy efficient low carbon technologies will be identified and evaluated for the final line up of the demo activities during the design and development (PPG) phase of the proposed project.

Comment:

2). Co-financing amount in Table B for the project components are not sufficient to achieve the targeted demonstration facilities and the project goal. Please increase the co-financing ratio to 1:10.

Response:

The follow-up discussions between the project proponents and stakeholders resulted in a decision to increase the co-financing for the project, making the co-financing ratio 1:10.

Comment:

3). Please indicate the M&E budget for the project.

Response:

Considering the envisioned project activities and outputs, the estimated monitoring & evaluation budget for this project is US\$ 265,000.

Co-financing

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

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

Historically, co-financing ratio in China for energy efficiency projects since GEF 5 has been much higher than 1:7 which is an expected ratio for the average of all GEF project portfolio in GEF7. Please raise the ratio at no less than 1:10 for this project. In particular, please raise the co-financing funding from the private sector, namely the relevant companies and farmer cooperatives in project sites.

Please describe how the Ministry of Industry and Information Technology and the Ministry of Natural Resources were engaged to discuss and agree to finance the project with the proposed co-financing amounts. The best is to show meeting minutes or email communications.

Please consider mobilizing Investment Mobilized or IM from provincial and local governments.

For each source of co-financing identified as IM, the UNDP must provide a description on how it was identified.

The PIF does not show anything on how the IM by the private sector will be mobilized. Please address the issue on page 6.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised. The co-financing ratio is raised to 1:10.

Agency Response

Response to comments 10/1/202 MY:

Comment:

Historically, co-financing ratio in China for energy efficiency projects since GEF 5 has been much higher than 1:7 which is an expected ratio for the average of all GEF project portfolio in GEF7. Please raise the ratio at no less than 1:10 for this project. In particular, please raise the co-financing funding from the private sector, namely the relevant companies and farmer cooperatives in project sites.

Response:

Additional PCI companies have been identified as potential project partners. Among them are: Guizhou Phosphate Group, Jixing Chemical Group, Yuanan Industrial Park, and Hubei Yidu Chemical Industrial Park. These are PCI companies that can host the envisioned demonstrations under this project since some of them already have plans to carry out some of the preliminarily identified potential demos. While the project proponents believe that the estimated co-financing from these entities (based on their individual current planned energy efficiency and productivity improvement initiatives) will be available, the final co-funding commitment of each private sector participant will be confirmed during the project design stage. The private sector partners will cover part of the costs for the planning, design, engineering, installation, operation and maintenance of the demo green, energy efficient, low carbon technologies that will be implemented in their respective facilities. It should be noted that since the proposed project will only cover biological/chemical phosphate fertilizer production, farmer cooperatives will not be involved. The promotion and utilization of biological/chemical phosphate fertilizer is not directly part of the project. It is expected that other entities promoting the sustainable application of natural/chemical fertilizers will be doing this downstream activity. Nonetheless, such activities can be informed by the knowledge management products from, and other information dissemination activities of, the proposed project.

Comment:

Please describe how the Ministry of Industry and Information Technology and the Ministry of Natural Resources were engaged to discuss and agree to finance the project with the proposed co-financing amounts. The best is to show meeting minutes or email communications.

Response:

Several informal meetings have been conducted between the MIIT and MNR regarding the project activities that will be involved in the project. In these meetings, each partner have indicated their ongoing activities/programs concerning the PCI, as well as their expressed vision for the industry. Collectively, these form the main basis of the estimated financing that each party intends to contribute to the project. However, these informal meetings did not have the benefit of designated rapporteurs documenting the meeting minutes. Nevertheless, it is the common understanding of officials of both Ministries that the discussion results of each meeting are directly reflected in the pertinent version of the PIF.

Comment:

Please consider mobilizing Investment Mobilized or IM from provincial and local governments.

Response:

The provincial governments of Sichuan, Yunnan, Guizhou, and Hubei will play important roles in the implementation of the project. Firstly, the concerned departments of these provincial governments will actively promote the implementation of the project, promote the energy-saving, energy efficient and sustainable low carbon development of the PCI in their respective province. This will be done through the creation of the required enabling environment that will facilitate the realization of such kind of development in the PCI in each province. Among these are the development and enforcement of supportive policies and regulations that would incentivize the local PCI entities to adopt and apply green, energy efficient local carbon technologies and practices in their operations and processes, as well as adequate capacity building for all PCI stakeholders along the PCI value chain. As part of their responsibilities and regular activities, the provincial and relevant local governments will mobilize (either through appropriate reallocations of their annual budgets, or encouraging the PCI companies in their respective provinces to promote and support the enabling activities that the provincial/local governments will carry out, as well as motivating the PCI companies to invest in the implementation of green, energy efficient low carbon technologies in their respective production facilities.

Comment:

For each source of co-financing identified as IM, the UNDP must provide a description on how it was identified.

Response:

The identification of the IM co-financing for this proposed project is mainly derived from the discussions on UNDP with the project proponents, which are the MIIT and MNR. The project proponents are the ones that are in discussions with the potential project partners from the private sector (mainly the PCI companies) for the involvement of these entities in the project, which is specifically for the PCI. See also the response to the next comment below.

Comment:

The PIF does not show anything on how the IM by the private sector will be mobilized. Please address the issue on page 6.

Response:

Apart from their expressed co-financing of the project, on the basis of their respective programs/activities for the PCI, according to the MIIT and MNR there are special funds set aside by the national government for the use of government ministries and local governments in promoting energy efficiency and pollution reduction. These funds usually needs the private sector's financial contributions. The proposed project, same as any other GEF-supported project in China, will make use of this special fund to ensure IM. Such practice has been proven effective to ensure government co-financing of donor-funded projects. The PCI entities that have been consulted for potential participation in the project have expressed interest in participating in the project, e.g., hosting the project demos. Nonetheless, at this early stage (PIF development), the estimates for the private sector co-financing, is at best order-of-magnitude. This will be further estimated in more detail during the design and development stage of the project.

GEF Resource Availability

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

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes. The proposed GEF financing in Table D, including the Agency fee is in line with GEF policies and guidelines. They total \$10,781,000 which is within the resources available from CCM.

Agency Response

The STAR allocation?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes. The MOF of China has budgeted \$11 million of CCM funding for this project, per the meeting of the GEF Mission and the MOF in Beijing in October 2019.

Mote comments will be provided once the LoE is available in the Portal.

10/29/2020 MY:

Yes, actually, the OFP signed an LoE with \$1.045 million of CCM funding for this project.

Agency Response

The focal area allocation?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes. The MOF of China has budgeted \$11 million of CCM funding for this project, per the meeting of the GEF Mission and the MOF in Beijing in October 2019.

Mote comments will be provided once the LoE is available in the Portal.

10/29/2020 MY:

Yes, per the LoE, the project can use \$1,045,000 and the project budget is within the budget.

Agency Response

The LDCF under the principle of equitable access

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

N/A

Agency Response

The SCCF (Adaptation or Technology Transfer)?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

N/A

Agency Response

Focal area set-aside?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

N/A

Agency Response

Impact Program Incentive?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

N/A

Agency Response

Project Preparation Grant

5. Is PPG requested in Table E within the allowable cap? Has an exception (e.g. for regional projects) been sufficiently substantiated? (not applicable to PFD)

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes, it is within the allowed cap.

Agency Response

Core indicators

6. Are the identified core indicators in Table F calculated using the methodology included in the correspondent Guidelines? (GEF/C.54/11/Rev.01)

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

In Indicator 6.1, please delete 36,970,000.

In Indicator 6.2, please change 36.97 into 36,970,000.

Please check the number of saved energy (1.73 MJ). It is wrong, because the number is too, too small.

Please put the number of women and girls who will get benefits from the project.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

The original values in the PIF are 36.97 million tons, and 1.93x10¹¹ MJ. These are now re-stated as 36,970,000 tons; and 1.93x10¹¹ MJ. Recalculations were made and the new values are as follows: GHG emission reduction (project lifetime) = 35,961,000 tons; Energy savings (project lifetime) = 1.73x10¹¹ MJ. The corrected values are shown in Part I, Sec. F and Annex B.

For Core Indicator 11, about 600,000 women and girls and 600,000-1,000,000 men would benefit from the project, mainly from improvement of work environment and new job opportunities in mines, improvement of the natural environment of nearby towns and villages surrounding the phosphate mines.

Project/Program taxonomy

7. Is the project/ program properly tagged with the appropriate keywords as requested in Table G?

Secretariat Comment at PIF/Work Program Inclusion
10/1/202 MY:

Yes, it is in Annex C.

Agency Response

Part II – Project Justification

1. Has the project/program described the global environmental / adaptation problems, including the root causes and barriers that need to be addressed?

Secretariat Comment at PIF/Work Program Inclusion
10/1/202 MY:

Not at this time.

The project description is unclear. The PIF is very difficult for readers to understand. Some data make readers confusing. For example,

On page 11 of the PIF, in Section of 1a.2. Baseline scenario and any associated baseline projects -Baseline scenario, it reads the following:

In 2019, the average energy consumption per ton of raw phosrock in phosphate mining in China is 1.94 kg standard coal, and the corresponding carbon emission is 5.04 kg CO₂. The average energy consumption per ton of raw phosrock is 7.93 kg standard coal, and the corresponding carbon emission is 20.6 kg. The average utilization rate of waste rock is 39.5%. The average utilization rate of tailings is 23.86%. According to the PCI estimate, there are potentials for reduction in the industry's energy consumption by 3% and for an increase in utilization rate of generated waste products by 3% in 2025. Compared to the PCI in developed countries, China PCI's mining efficiency, beneficiation efficiency, waste rock utilization rate and tailings utilization rate are relatively low ((an average lower by about 10%).

The above highlighted numbers and the English language confuse readers. Please hire a professional to check and edit the whole PIF and make the PIF comply with the high standard of the UNDP and the GEF. Thanks.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

Thanks for pointing out this inadvertent mistake. The average energy consumption per ton of raw phosrock in phosphate mining is 1.94 kgs standard coal; and the average energy consumption per ton of refined/beneficiated phosrock is 7.93 kgs standard coal. The corresponding carbon emission from these specific energy consumptions in the phosphate mining and beneficiation process are, 5.04 kg CO₂, and 20.6 kg CO₂, respectively, per ton of raw phosrock.

The statements that contain the highlighted numbers have been restated to include the specific energy consumption and corresponding carbon emission in the phosphate refining/beneficiation process. The other statements are clear, and the project proponents are certain that there is no need for further editing of the remaining texts.

2. Is the baseline scenario or any associated baseline projects appropriately described?

Secretariat Comment at PIF/Work Program Inclusion

10/1/2020 MY:

Not at this time. Please see the comments in the previous box.

Technically, please articulate the baseline technologies and existing policies that are related to phosphate mining. Please list all major names of technologies, capacities, phosphate industrial equipment, and energy consumptions per unit of output (or energy efficiency) of these technologies and equipment. Then, please also forecast what will happen to these phosphate mining and industrial technologies in terms of energy efficiency and energy consumption in the forthcoming 20 years if the GEF does not finance this project. The above analysis can focus on the three baseline projects listed on page 13 of the PIF. This is the baseline scenario. With this scenario and information, the alternative scenario can be easily presented and understood.

More comments will be provided on the forthcoming revised version.

10/29/2020 MY:

Yes, comments were addressed and the baseline scenario was revised.

Agency Response

Response:

The project proponents have clarified further the baseline scenario. The current trend of phosrock production and phosphate fertilizer consumption in China are expected to continue to grow at the same rates in the past 5 years and are expected to peak during the period 2020-2025 where the demand for phosrock is estimated to reach 100 million tons/year. The current average specific energy consumption and CO2 emission in phosphate mining and beneficiation, and phosphate chemicals production will more or less remain the same. All improvements in the processes and operations of the PCI will mainly involve replacement and upkeep of the process equipment, and upgrades are mainly for scaling up production. Nonetheless, it is expected that at best, the energy utilization performance (and corresponding CO2 emission generation) in the major production processes and operations in the PCI will remain the same unless further improvements involving green, energy efficient low carbon technologies are introduced and applied in the various PCI entities in China.

3. Does the proposed alternative scenario describe the expected outcomes and components of the project/program?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time. The alternative scenario is not clear.

In the Proposed Alternative Scenario, please articulate what kind of high efficient technologies and industrial processes will be used to replace the existing inefficient ones in phosphate rock mining and production of natural phosphate fertilizer.

More comments will come after the above essential issue is addressed.

10/29/2020 MY:

Yes, comments were addressed and alternative scenario was revised.

Agency Response

Response:

With the forecast growth rate of phosrock production, phosphate chemicals and phosphate fertilizer production, it is expected that additional production capacities will be installed, or the productivity rates will be improved with existing installed capacities. In that regard, the alternative scenario in the PCI will feature the

application of new improved production technologies in the new plants that will be built and in existing facilities that will be retrofitted. These improvements are mainly in line with the achievement of the envisioned alternative scenario, whereby the productivity rates are improved, and at the same time the specific energy consumption in the phosrock mining and refining operations/processes, and phosphate chemicals and the management of PCI waste. The alternative scenario is also characterized by the widescale application of circular economy initiatives that will feature waste recovery, recycling and utilization, which will bring about improved resource conservation, reduced production losses and process wastage, and reduced accumulation of PCI mining and refining waste, as well as the phosphate chemicals production waste by-products. Such scenario will feature lesser energy consumption as the specific energy consumption for the PCI operations and processes will be reduced, with the corresponding reduction in GHG emissions from the PCI, as well as lesser environmental footprint, with the minimization of the generation of solid, liquid, and gaseous wastes from the industry.

In the alternative scenario, through the application of green energy efficient low carbon technologies, some of which are mentioned above, it is expected that the recovery rate in phosrock mining will improve from 72% to 75%. Carbon emissions per ton of phosphate chemical products will be reduced by an average of 0.04 tons by 2025, i.e., from 1.25 tons CO₂ per ton phosphate chemicals to 1.20 tons. Furthermore, the comprehensive utilization rate of PCI waste will increase to 80% by 2025, which is 30% higher than the utilization on current policy trajectory.

To enable the realization of the envisioned alternative scenario, the widespread application of several potential green, energy efficient and low carbon technologies in the 3 major sub-sectors of the PCI (phosrock mining and refining; phosphate chemicals production; and waste management) is very essential. Depending on the current state of the production facilities and operations and processes in each company within the PCI, there are proven applicable technologies that can be applied by each of them to transform their operations to a more sustainable green and low carbon track. Among these are the following, which are also among those that are envisioned to be promoted and demonstrated in the proposed project:

- Phosphate mining and refining: (1) Improved phosrock transportation from mine site to refining section by phosrock conveying and phosrock slurry pumping and pipeline transportation; (2) XRT sorting; and (3) Biological phosphate fertilizer from phosrock mining waste and refining tailings.
- Phosphate chemicals production: (1) Process optimization and the improved heat recovery in thermal phosphoric acid production; (2) Medium- pressure steam production using tail gas (CO) from the electric furnace used in yellow phosphorus production; and (3) Improved wet-process phosphoric acid production.
- PCI waste management: (1) Improved phosphogypsum pre-treatment; (2) improved production of α high-strength gypsum; and (3) improved production of β gypsum.

The specific designs of the application of each technology will be done during the project design. Nonetheless, suffice to say that each technology will be designed based on the design practices and experiences from the technology application that will ensure technical and financial viability, reliability, climate resilience, safety, and environmental integrity. Not only the application of green, energy efficient low carbon technologies in the production operations and processes in each of these

sub-sectors of the PCI will be promoted and showcased in the project, but also in the design and operation of the utility systems (e.g., production and supply of electricity, process water, compressed air, steam, etc.) will also be included. For example, in the phosphate chemicals production, apart from improved wet process phosphoric acid production processes, improved waste energy recovery system will be promoted and demonstrated in the case of thermal phosphoric acid production process that is used in the production of yellow phosphorus. Such process produces CO waste gas that can be used as energy source in the other thermal energy operations/processes in the plant. In companies where the sulfuric acid that is used in the phosphoric acid production, increased heat recovery from the sulfur dioxide coolers with the generation of steam for electricity production will also be promoted. Existing utility systems that utilize fossil fuels (e.g., coal) will be improved in their energy performance to reduce greenhouse gas emissions. The application of proven cleaner production processes, where these are feasible in selected PCI operations and processes, will also be demonstrated. Lastly, apart from the improved efficiency in energy consuming operations/processes in phosphate chemical production, comprehensive management, and utilization of waste by-products, particularly phosphogypsum (wet process phosphoric acid production), and high temperature phosphorus slag waste (thermal phosphoric acid production) will be promoted.

4. Is the project/program aligned with focal area and/or Impact Program strategies?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Yes, as commented in Box 1 of Part I.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

In the Section of **1a.5: Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing**, please elaborate what kind of energy efficient technologies, green production facilities, and their production capacities will be introduced onto China's phosphate rock mining and phosphate fertilizer production.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

Based on the current projects (i.e., to be implemented, and/or planned and budgeted) of the identified partner PCI companies for their respective production operations and processes, further improvements on the planning, design and application of green, low carbon technologies were preliminarily identified. These projects will be subsumed into the proposed project as baseline demos that will be enhanced/improved (or modified) to bring about more energy savings and GHG emission reductions. Among these technologies are those presented in the response to the previous comment regarding the alternative scenario that this proposed project intends to bring about. The cost for such improvements are practically the incremental costs that the proposed project requires the GEF to financially support. The improvements in the baseline activities will depend on their type and original design. In the case of the demonstrations, these improvements will basically involve making the applied strategy/methodology or technology application: (1) more energy conserving and energy efficient, e.g., improved waste heat recovery, utilization of more energy efficient equipment/process; (2) more economically feasible, e.g., provision of financial support/incentives; (3) more environment-friendly, e.g., application of cleaner production techniques; (4) more resource conserving, e.g., application of improved phosphogypsum processing; and, (5) addressing the absent or insufficient enabling conditions (e.g., policies, regulations, standards, capacity and skills upgrading). Without these incremental features, the envisioned alternative scenario for the development of the PCI in China that the proposed project intends to bring about will not be realized. The detailed incremental cost analysis will be carried out during the design and development (PPG) stage of the proposed project.

6. Are the project's/program's indicative targeted contributions to global environmental benefits (measured through core indicators) reasonable and achievable? Or for adaptation benefits?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not clear at this time. The data and the calculation need to be checked and revised.

In Annex D on page 34, please site the data sources and justify the following assumptions:

“In phosphate rock mining in China the average energy consumption per ton of raw phosrock is 1.94 kgce (kilograms of standard coal), while that in the beneficiation process is 7.93 kgce. The project envisions an energy saving rate of 15% in the mining process and 10% in the beneficiation process. Additionally, the improvement of mining efficiency (including improving mine recovery rate, mining dilution rate, and beneficiation recovery rate) can achieve a reduction of 0.987 kgce per ton of output. The envisioned low carbon mining demo under the proposed project is expected to process about 10 million tons (Mt) per year of phosrock. For that production rate, the estimated energy saving in phosphate mining would be about.”

The main body of the PIF does not present any information on forest recover. Why and how the project can claim GHG reduction from afforestation? This comment is for the second last paragraph of the PIF:

“In addition, ecological restoration of phosphate mines can achieve 1,000 hectares of afforestation. It is estimated that 1 hectare of forest trees can achieve carbon sequestration of 1.01 tCO₂ per day, and the conversion coefficient of carbon sequestration efficiency within five years of non-adult forest trees is 60%. It is estimated that for an ecological restoration that will be facilitated by the project, the potential carbon sequestration would be about:

*0.22 MtCO₂/yr. × (1000 ha. × 1.01 tCO₂/(ha. * d) × 60% = 0.22 MtCO₂e/yr.”*

What is 0.22 MtCO₂/yr at the beginning of the above formula? The formula does not make any sense!

In this planet, nobody can find any forest that can sequester 1.01 tons of CO₂ per ha in each or per day! Please revise the PIF and add information on afforestation and hire an expert in forest and climate change to recalculate carbon sequestration.

Please rewrite the whole section of GHG emission estimation!

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Comment:

The data and the calculation need to be checked and revised. In Annex D on page 34, please site the data sources and justify the following assumptions: “In phosphate rock mining in China the average energy consumption per ton of raw phosrock is 1.94 kgce (kilograms of standard coal), while that in the beneficiation process is 7.93 kgce. The project envisions an energy saving rate of 15% in the mining process and 10% in the beneficiation process. Additionally, the improvement of mining efficiency (including improving mine recovery rate, mining dilution rate, and beneficiation recovery rate) can achieve a reduction of 0.987 kgce per ton of output. The envisioned low carbon mining demo under the proposed project is expected to process about 10 million tons (Mt) per year of phosrock. For that production rate, the estimated energy saving in phosphate mining would be about.”

Response:

The project proponents have added data sources in Annex E. For the component 1 “low carbon phosphate rock mining and refining”, the current energy consumption data were obtained from the average specific energy consumption in major phosphate mines in southwest China. The 15% and 10% reduction rate data are the level best estimates from various assessments done by the PCI from the application of potential of technology improvements. The total demo scale is 10 Mt per year in phosrock mining.

Comment:

The main body of the PIF does not present any information on forest recover. Why and how the project can claim GHG reduction from afforestation? This comment is for the second last paragraph of the PIF: “In addition, ecological restoration of phosphate mines can achieve 1,000 hectares of afforestation. It is estimated that 1 hectare of forest trees can achieve carbon sequestration of 1.01 tCO₂ per day, and the conversion coefficient of carbon sequestration efficiency within five years of non-adult forest trees is 60%. It is estimated that for an ecological restoration that will be facilitated by the project, the potential carbon sequestration would be about: $0.22 \text{ MtCO}_2/\text{yr.} \times (1000 \text{ ha.} \times 1.01 \text{ tCO}_2/(\text{ha.} * \text{d}) \times 60\% = 0.22 \text{ MtCO}_2\text{e}/\text{yr.}$ ” What is 0.22 MtCO₂/yr. at the beginning of the above formula? The formula does not make any sense! In this planet, nobody can find any forest that can sequester 1.01 tons of CO₂ per ha in each or per day! Please revise the PIF and add information on afforestation and hire an expert in forest and climate change to recalculate carbon sequestration. Please rewrite the whole section of GHG emission estimation!

Response:

The restoration of old depleted phosrock mines is not part of the proposed project. The mention in the original PIF of such activity in conjunction with afforestation is primarily for stating that GHG emission reductions (i.e., carbon sequestration) from of such activity are regarded as indirect/consequential. The relevant statements have been modified to clarify that while such activity will result in indirect GHG emission reductions, it is not part and parcel of the proposed project. However, as part of the sustainable development of the PCI value chain, the mine site restoration efforts will be carried out in a separate project using government funds.

7. Is there potential for innovation, sustainability and scaling up in this project?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

In the section of **1a.7: Innovation, sustainability, and potential for scaling up**, please use quantitative data to justify the arguments. For example, for Innovation, please elaborate how much energy will be reduced per ton of outputs in each of selected demonstration sites at mining, industry and facilities, and how much carbon intensity will be reduced in the phosphate production industry in China due to the innovative technology application and policy advancement by the project. Similarly, use quantitative information to justify sustainability and scaling up.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

The energy savings that are expected from the activities and demonstrations that will be carried out under the proposed project are based on observed improvements in the specific energy consumption in the various operations and processes in the PCI in China and to some extent from the same industry in other countries that are endowed with phosphate mineral resources. The details of the energy saving and GHG emission reduction calculations are shown in Annex E.

The innovative technology applications in the PCI that will be promoted and facilitated under the proposed project are estimated to bring about improvements in the specific energy consumption (SEC) in the various sub-sectors of the PCI. For example, about 15% and 10% reduction in the specific energy consumption in the phosrock mining, and phosrock refining/beneficiation, respectively. The proper application of these technologies will also reduce the overall SEC in phosrock mining and refining operations (e.g., improved mine recovery rate, mining dilution rate, and beneficiation recovery rate) to 0.987 kgce per ton phosrock. As shown in Annex E, for a demo capacity of 10 million tons/year phosrock, the total energy savings would be = 20,710 tce/year, and the corresponding total GHG emission reduction is 54,260 tCO₂/year. With the same strategy, green, energy efficient low carbon technology applications in phosphate chemicals production will result in a reduction in the overall SEC by 5%. At a demo capacity of 18.2 million tons/year, this translates to a total energy savings of 1.34x10¹⁰ MJ/year and a corresponding GHG emission reduction of about 1.2 million tCO₂/year. Please refer to Annex E for the potential energy savings and corresponding GHG emission reductions in the implementation of innovative circular economy technology applications in the management and utilization of the mining and refining wastes, and phosphate chemicals production by-product wastes from the PCI

In regards the sustainability of the interventions and enabling environment that the proposed project is envisioned to create, estimates based on the number of companies in the PCI, it is estimated that the replication of the demos that will be implemented under the proposed project is in the order of 3 to 4 per demo.

In the regards potential scale-up, in the case of the energy efficiency and environmental footprint improvements in the phosrock mining and refining operations of the PCI and considering the number and production capacities of the big phosrock mining companies, the planned demo capacity in this proposed project can

potentially be scaled up 5 times. In that case, the PCI in China can potentially be among the significant contributors to the achievement of the country's NDC targets.

Project/Program Map and Coordinates

Is there a preliminary geo-reference to the project's/program's intended location?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time. There is a map in the PIF, but there is not any description on whether the selected project area in Yunnan has territory dispute with China's neighboring countries. Please address the issue in the PIF.

10/29/2020 MY:

Yes, comments were addressed and the issue is cleared.

Agency Response

Response:

The identified project sites in Yunnan Province are far from the China-Myanmar border. As far as the project proponents know, there is known territorial dispute in that province. Note that Myanmar and China are currently working together on development initiatives under the Belt & Road Initiative.

Stakeholders

Does the PIF/PFD include indicative information on Stakeholders engagement to date? If not, is the justification provided appropriate? Does the PIF/PFD include information about the proposed means of future engagement?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time.

On pages 20-21, please elaborate the roles of project stakeholders to match the outputs of the project in Table A. For example, which organization or project stakeholders will execute the sub-components of capital investments for technology demonstrations. Please be aware that **approval of the PIF does not imply that the GEF Implementing Agency will execute the Project. the UNDP cannot be an executing agency in the project.** There must be specific project stakeholders to execute the project.

Please elaborate whether this project will benefit or impact any Indigenous or minority Peoples and Local Communities in the mining areas. If so, please show evidence that they have been consulted with the project impacts. Please indicate which stakeholders will be affected by the project on ground and how they have been consulted.

Ensure that the PIF include information about the future roles of stakeholders and proposed means of future engagement. Please check if the future roles of stakeholders have been identified. Please demonstrate how the project keeps engaging stakeholders through adequate means.

Please elaborate any difficulties or barriers in stakeholders engagement due to COVID-19, and provide measures to deal with them. Please see more comments on COVID-19 issues at the end of this review sheet.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Comment:

*On pages 20-21, please elaborate the roles of project stakeholders to match the outputs of the project in Table A. For example, which organization or project stakeholders will execute the sub-components of capital investments for technology demonstrations. Please be aware that **approval of the PIF does not imply that the GEF Implementing Agency will execute the Project. the UNDP cannot be an executing agency in the project.** There must be specific project stakeholders to execute the project.*

Response:

As far as the project proponents know, and as they have presented in the original PIF, is that for stakeholder engagement, the requirement is to present the respective roles of the stakeholders in the project preparation, not in project implementation. Please refer to the table in Part II, Sec. 2 that now shows the project outputs that each stakeholder will help design the project activities. Note that it is also most likely that some of the stakeholders will also be involved in the implementation of the activities that they assisted in the design. It is the clear understanding of the UNDP that it being the GEF Agency for this project is mainly responsible for the project development and approval/endorsement. Later, in regards project implementation, it is clear to the project proponents that UNDP's role is limited to project oversight, seeing to it that actions carried out by the project's designated implementing partner and other responsible parties in regards their management and execution of the project are as per the signed project document, aligned to the country program, and do not contravene the principles of the financial regulations and rules of UNDP and GEF. To emphasize, UNDP has no role in the execution of any project activity nor any project management task. Its role is limited to overseeing the project implementation on behalf of the GEF.

Comment:

Please elaborate whether this project will benefit or impact any Indigenous or minority Peoples and Local Communities in the mining areas. If so, please show evidence that they have been consulted with the project impacts. Please indicate which stakeholders will be affected by the project on ground and how they have been consulted.

Response:

There are some minorities living in the mining areas, and some are living near the planned demo sites. According to the project proponents (MIIT and MNR), the local governments that cover the planned project sites have contacted the local people in each of these areas, including people that belong to minority groups. The planned project has been promoted to these people as something that will bring substantial benefits to the citizenry inasmuch as the project will significantly contribute to the sustainable development of the local economy and improve/conservate the national environment. The expressed interest and support of the local residents are among the motivations to the project proponents to proceed with the development of the proposed project.

Comment:

Ensure that the PIF include information about the future roles of stakeholders and proposed means of future engagement. Please check if the future roles of stakeholders have been identified. Please demonstrate how the project keeps engaging stakeholders through adequate means. Please elaborate any difficulties or barriers in stakeholder's engagement due to COVID-19 and provide measures to deal with them. Please see more comments on COVID-19 issues at the end of this review sheet.

Response:

The project proponents have consulted the relevant and potential stakeholders for the project prior to the development of the project concept, i.e., original PIF. These initial stakeholder consultations has led to the delineation of the roles of each stakeholder in the project design as presented in the table in Part II, Sec. 2 of the PIF. The stakeholders will be engaged during the project planning and design phase through in-person consultation meetings and virtual communication means. The private sector and related government agencies have provided inputs to the development of the PIF and feedbacks to queries from UNDP. Experts in the PCI that were consulted by the project proponents have also provided technical information for the project design. The COVID-19 situation has posed certain difficulties on stakeholder engagement by preventing free travel across provincial and municipal jurisdictions and thus in-person communication. If the pandemic will persists, virtual communication tools will be used to ensure timely and proper stakeholder inputs in the future stages of project planning and implementation.

The future engagement of the stakeholders is more or less ensured inasmuch as almost all of them will be involved in the project implementation, particularly the project proponents (MIT and MNR) and the private sector entities (i.e., PCI companies). In particular, the PCI companies will be involved in the project implementation since the main target beneficiary is the local PCI in the provinces that will be involved in this project. This would naturally ensure constant engagement with them from design, implementation, and completion of the project. To formalize this, a Stakeholders Engagement Plan (SEP) will be prepared during project design and development (PPG) stage. A stakeholder analysis will be carried out to identify further all the relevant stakeholders of the project that will be engaged as partners to deliver specific outputs of the project and collectively with their outputs bring about the project outcomes. The main output of the analysis is the SEP. In such plan, the roles and responsibilities of the pertinent stakeholders are identified, including their perception of likely benefits, risks and impacts of the proposed project. This is also to assess how to mitigate risks on stakeholders as a result of the implementation of the project.

Gender Equality and Women's Empowerment

Is the articulation of gender context and indicative information on the importance and need to promote gender equality and the empowerment of women, adequate?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time.

The description on gender issues on pages 21-22 is too general. Please elaborate preliminary issues or findings on gender-specific context of the project, describes plans to address gender issues during the project development phase. For example, please show any planned gender responsive measures/activities to address gender gaps and promote gender equality and women's empowerment that is related to the project.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

The project will be guided by principles of gender equality and women's empowerment. Women are involved in both the management and technical departments of the national and local government agencies/institutions and play major roles in the top-level decision-making and strategic design process. On the ground level, the

implementation of the proposed project will promote the welfare of, and offer equal opportunities to, both men and women, but particularly women in the areas where the project will be implemented. Firstly, implementation of this project will improve the technical level and reduce the intensity of labor in the PCI, which will in turn improve the work environment, job adaptability and enhanced chances of job advancement for women who are in some form or another involved in the PCI. Education and professional training opportunities that the proposed project will provide to PCI employees will contribute to improving women's professional competitiveness in the workplace and expand women's scope of employment in the underdeveloped and agriculture-based regions of the country, some of which include the planned demo sites of the proposed project. Secondly, the implementation of this project will directly improve the quality of local ecological environment and indirectly improve women's and children's health. Thirdly, the implementation of this project will help ensure agriculture and food security through the reduction of rural pollution, and thus reduce the risk in women's major source of income in these regions.

During the project design and development (PPG) stage an assessment will be carried out to determine how the project will facilitate gender equity in the PCI with the implementation of green, energy efficient low carbon technologies in all aspects of the day-to-day operations and processes in the industry. Considering the limited information regarding the current gender equity context in China's PCI that are currently available to the project proponents, the following indicative gender actions are recommended to reduce some of the existing inequalities and comply with national and international gender regulations and best practices. Details of these indicative recommended actions, as well as others that will be identified later, will be determined during the project design and development stage.

- Ensure that the project will be guided by principles of gender equality and women's empowerment. Women are involved in both the management and technical departments of the China's government agencies/institutions and play major roles in the top-level decision-making and strategic design process.
- Ensure the proposed policies, regulations, standards on the application of green, energy efficient, low carbon technologies in the PCI are gender responsive;
- Complete the gender action plan and ensure that it is implemented thoroughly;
- Ensure gender equity is included as a criterion for providing/distribution of goods and services to communities in the project sites;
- Strengthen existing governance structures that promote gender equality and leadership in local governance structures in the PCI to support project implementation;
- Encourage information exchange and learning for men, women, and youths in the communities where the phosrock mines and phosphate refining and phosphate chemicals production facilities are situated to promote green, energy efficient and low carbon practices to other communities;
- Gender disaggregated data is collected during trainings, workshops, discussions, interviews, or focus group interaction;
- Consult both men and women during baseline data assessments, mid-term evaluations and terminal evaluations in the project sites;
- Ensure both men and women access information sharing sessions e.g. individuals with child-caring responsibilities or individuals with work obligations or disability;
- Support the development and promotion of service provision jobs in the relevant downstream activities of the PCI

Private Sector Engagement

Is the case made for private sector engagement consistent with the proposed approach?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time.

As indicated in the box of co-financing, please further engage the private sector to enlarge co-financing amounts for the project (pages 22-23).

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

The project co-financing ratio has already been increased to 1:10 by involving more PCI companies. The project will include large number of private enterprises from the four project provinces, including Yunnan Haoming Fine Phosphorus Chemical Co., Ltd., Yunnan Haokun Phosphorus Chemical Co., Ltd., and Yunnan Xuanwei Phosphorus Power Co., Ltd. In Yunnan province; Weng'an Xingnong Phosphorus Chemical Co. Ltd., Guizhou Yuedu Chemical Co., Ltd. and Guizhou Batian Ecological Engineering Co., Ltd. in Guizhou province; Hubei Xiangyun (Group) Chemical Co., Ltd., Hubei Huangmailing Phosphorus Chemical Co., Ltd., Xiangyang Zedong Chemical Group Co., Ltd. in Hubei province; Sichuan Hongda (Group) Co., Ltd., Sichuan Blue Ocean Chemical (Group) Co., Ltd., and Sichuan Hanyuan Chemical General Factory in Sichuan province. MOF and the project proponents (MIIT and MNR) will work with provincial governments to coordinate fund matching from local enterprises and ensure the required financial capacity from the private sector be met.

Risks to Achieving Project Objectives

Does the project/program consider potential major risks, including the consequences of climate change, that might prevent the project objectives from being achieved or may be resulting from project/program implementation, and propose measures that address these risks to be further developed during the project design?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not completed at this time.

Please consider any risk and measures to deal with the risk that the co-financing from the private sector may not be available.

Please consider any risks and measures to deal with the risks that are caused by COVID-19 and post-COVID-19. These risks include (1) availability of Technical Expertise and Capacity and Changes in Timelines in the selected provinces; and (2) any expected financing from the government and co-financing from all stakeholders. Please also see the list of activities to be undertaken to deal with COVID-19 that are attached in the last question/comments of the review sheet.

Since the project is related to mining in forested area, please elaborate how the project will help protect and restore natural systems and their ecological functionality. How the agency will minimize the risk of damaging the existing eco-system.

Please elaborate how to decrease the risk of human and nature conflicts in such a mining project that is related to landscapes and land use.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Comment:

Please consider any risk and measures to deal with the risk that the co-financing from the private sector may not be available.

Response:

This risk is already covered in the PIF, particularly in the following risks: (1) Allocated funds cannot support project implementation in time and in full; and (2) Availability of co-financing is delayed and negatively affects the implementation of the project activities. Appropriate preventive and alleviative mitigation measures were also provided for each risk. These are rated low to medium.

Based on the response to the previous comment, the risk of co-financing from the private sector not materializing is rated low. With the large pool of potential private sector participants is considered minimal. Any remaining risk would be mitigated by public funding from the local governments where the project activities will be carried out.

Comment:

Please consider any risks and measures to deal with the risks that are caused by COVID-19 and post-COVID-19. These risks include (1) availability of Technical Expertise and Capacity and Changes in Timelines in the selected provinces; and (2) any expected financing from the government and co-financing from all stakeholders. Please also see the list of activities to be undertaken to deal with COVID-19 that are attached in the last question/comments of the review sheet.

Response:

China has developed a rather effective institutional system to address the pandemic situation in a timely manner. The initial COVID-19 outbreak did not pose a substantial risk on the project since the project planning phase was mostly carried out through virtual stakeholder engagement, and where only possible and feasible direct in-person consultations with project partners in the private sector. If the pandemic will persists during the project implementation phase, it is possible that the pandemic could cause problems in the installation of the demonstration facilities by halting work and disrupting the movement of personnel and materials. However, other implementation areas such as policy-making and educational programs could still be carried out with the help of virtual means. Contingency plans for project implementation will be prepared to counter serious impediments from future outbreaks, and proper financial, technical, and medical assistance would be made available by the provincial and state institutions in the project provinces to ensure safe operation of project personnel in the partner agencies/institutions and in the demonstration facilities. Please see Annex F of the revised PIF for more detailed Covid-19 risk assessments and how will these be addressed by the project.

Comment:

Since the project is related to mining in forested area, please elaborate how the project will help protect and restore natural systems and their ecological functionality. How the agency will minimize the risk of damaging the existing eco-system.

Response:

The planned phosphate mining and refining demos will be implemented in mines whose operations have already been approved by the government as compliant with current environmental regulations. The favorable results of the environmental assessments of these mines enable these to be in operation. The environmental assessments were done under the auspices of the Chinese Government's "Green Mine" Project. One of the core objectives of that project is to minimize the disturbance of natural environment during mining operations with the requirements for compliance with specific measures such as enclosed mining area, waste water recycling, solid waste utilization and/or dry piling, and ecological restoration. The planned technology application demos on the mining and refining of phosrock and the proper management of the mining/refining and phosphate chemical production by-product wastes in the identified "Green Mine" phosrock mines will be designed in such a way to maintain the various environmental protection features that these mines have already put in place, and where possible, include improved incremental features that can be showcased as part of the planned demos.

Comment:

Please elaborate how to decrease the risk of human and nature conflicts in such a mining project that is related to landscapes and land use.

Response:

As in the response to the previous comment, the planned activities, particularly the technology application demos on the mining and refining of phosrock and the proper management of the mining/refining and phosphate chemical production by-product wastes will be carried out in PCI companies with mines that have been designated as "Green Mine" phosrock mines. Such mines are considered compliant to the environmental protection requirements for minimizing the disturbance of natural environment during mining and refining operations, which most likely includes actions to minimize risks of human and nature conflicts in such operations that is related to landscapes and land use. In that case, the demos will be designed in such a way that the various environmental protection features that these mines have already put in place are fully maintained and sustained.

Coordination

Is the institutional arrangement for project/program coordination including management, monitoring and evaluation outlined? Is there a description of possible coordination with relevant GEF-financed projects/programs and other bilateral/multilateral initiatives in the project/program area?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

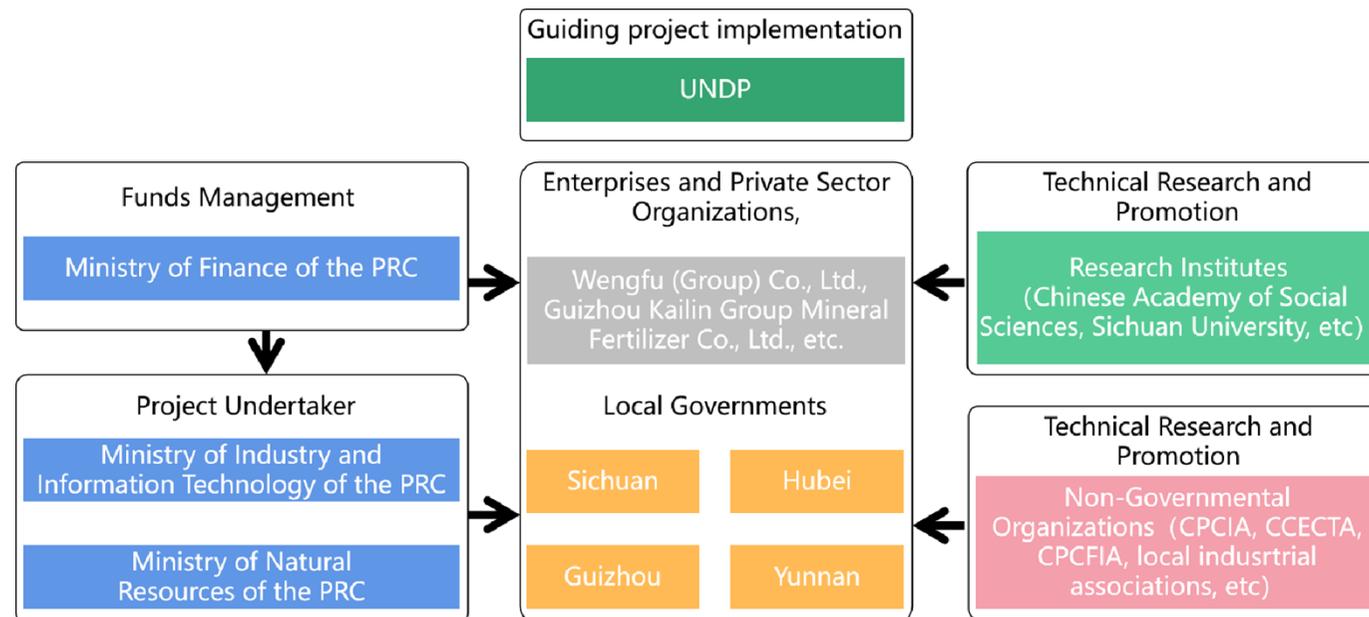
Please use a diagram to present the institutional structure with major stakeholders of the project in different provinces including monitoring and evaluation coordination at the project level. Please describe possible coordination with other relevant GEF-financed projects and other similar initiatives that are financed by other institutions.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:



The above diagram presents the indicative institutional arrangement among the project stakeholders for the project implementation, with the UNDP providing oversight/guidance in the project implementation as part of its GEF Agency responsibility. There will be a separate overall project management structure that involves a project steering committee, and this will be designed during the project design and development stage.

This project development work will be coordinated with, and possibly learn from the applied strategies in the implementation of activities of, ongoing GEF-funded EE projects in China. The project development work can also learn from the results, experiences, and lessons learnt from the implementation of these EE projects. These include the following UNDP-GEF projects:

- *Promoting Energy Efficient Electric Motors in Chinese Industries (PREMCI)*
- *Greening the Logistics Industry in Zhejiang Province (GLIZP)*
- *Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting*
- *Energy Efficiency Improvement in Public Sector Buildings in China*

The project proponents will also coordinate with the project development team that is currently working on the design and development of another UNDP-GEF RE/EE project in China, which is the Enabling Zero Carbon Energy in Rural Towns and Villages in China (EZCERTV) Project. This project also include the design, development, and implementation of green, energy efficient low carbon energy technologies in selected rural towns and villages in a number of provinces in China.

Consistency with National Priorities

Has the project/program cited alignment with any of the recipient country's national strategies and plans or reports and assessments under relevant conventions?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time.

Please elaborate how this project is aligned with China's NDCs to Paris agreement; how this project will contribute China's Net-Zero-Carbon Strategy by 2060 that was recently announced by Mr. Xi Jing Ping, the president of China.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Response:

The PCI in China is an important part of the country's industry sector. The goal of this project is the reduction of GHG emissions from the PCI. The planned direct interventions from the project itself is expected to bring about 35.96 million tons direct CO2 emission reduction. The sustained promotion and replication/scale-up of the project demonstrations after the end of the project are expected to further bring about more substantial GHG emission reduction. All these will be an important contribution to the achievement of China's committed GHG emission reduction targets to the Paris Agreement and its carbon neutrality target by 2060. This project would contribute to the achievement of China's nationally determined contributions (NDCs) set out in the Paris Agreement at an earlier date and China's 2060 Net-Zero-Carbon goal through the promotion an integrated region-wide energy conservation, green and low carbon development of the country's PCI. Apart from the GHG emission reductions from the implementation and replication of the demonstrations, the enabling frameworks (e.g., policies/regulations/incentives) and conditions that the project will establish and operationalize, and the technical and institutional capacity that will be enabled will facilitate further development and application of green, energy efficient low carbon technologies and practices in the PCI, and potential influence also the other industry sectors with significant carbon and environmental footprints to follow suit.

Knowledge Management

Is the proposed “knowledge management (KM) approach” in line with GEF requirements to foster learning and sharing from relevant projects/programs, initiatives and evaluations; and contribute to the project's/program's overall impact and sustainability?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time. Please address the issues below:

Lack of an overview of existing lessons and best practice that inform the project concept;

Lack of time-linked plans to learn from relevant projects, programs, initiatives & evaluations;

Lack of description of processes to capture, assess and document information, lessons, best practice & expertise generated during project implementation;

Lack of elaboration of description on how to develop a sound GHG accounting tool and methods that will be used for this project and other scaling -up projects in the future in China

Lack of plan to develop knowledge exchange, learning & collaboration among different provinces that have been selected for technology demonstrations. Please consider knowledge platforms and websites.

Lack of long term plans for strategic communications and knowledge sharing all over China.

10/29/2020 MY:

Yes, comments were addressed and the issue is cleared.

Agency Response

Response:

The description of the indicative knowledge management approach and plan for the proposed project is presented in Annex I of the revised PIF.

Environmental and Social Safeguard (ESS)

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

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time. The issue of Environmental and Social Safeguard (ESS) has not been addressed.

While doing the ESS homework, please:

1. Ensure that the PIF has provided the preliminary overall risk categorization (High/Substantial, Moderate/Medium, Low). Please check for appropriate justification.
2. Confirm that the PIF includes information on any measures to address ESS related risks and impacts during project design and implementation.
3. Please upload any available screening/assessment reports such as preliminary Environmental and Social Risk and Impact Assessment report(s).

Please consider social measures to deal with the impact of COVID-19 at local communities where the mining activities are conducted.

10/29/2020 MY:

Yes, comments were addressed and the PIF was revised.

Agency Response

Comment:

The issue of Environmental and Social Safeguard (ESS) has not been addressed. While doing the ESS homework, please: (1) 1. Ensure that the PIF has provided the preliminary overall risk categorization (High/Substantial, Moderate/Medium, Low). Please check for appropriate justification. (2) Confirm that the PIF includes information on any measures to address ESS related risks and impacts during project design and implementation. (3) Please upload any available screening/assessment reports such as preliminary Environmental and Social Risk and Impact Assessment report(s).

Response:

The project proponents have prepared and submitted the UNDP Social and Environmental Screening Assessment (SESP) document, which includes the information asked in the comment. The SESP is the preliminary evaluation of the identified potential social and environment risks of the project, and this was uploaded to the GEF Portal on 28 September 2020 along with the PIF. A total of 8 risks were identified and each of these were assessed. Most of these were rated high, and the overall risk rating is high. The identified potential risks are adequately explained and the corresponding social and environmental management measures that are required to address each risk have been provided. Because of the high risk rating for this project, there will be more detailed social and environmental assessments that will be required during the project design and development stage. An environmental and social management plan (ESMP) will be prepared, particularly for the planned demos. The ESMP will be implemented during the project implementation stage. The SESP will be uploaded once more in the GEF Portal during the submission of the revised PIF and this Response Matrix document.

Comment:

Please consider social measures to deal with the impact of COVID-19 at local communities where the mining activities are conducted.

Response:

China has developed a relatively effective institutional system to address the Covid-19 pandemic in a timely manner taking into consideration potential socio-economic impacts. The initial COVID-19 outbreak did not pose a substantial risk on the project since the project planning phase was mostly carried out through virtual stakeholder engagement, and where only possible and feasible direct in-person consultations with project partners in the private sector. Care will be taken in the implementation of the project especially when the pandemic persists to ensure that hardware installation works that are involved in the demo activities in phosrock mining and refining, phosphate chemicals production, and waste management will be done safely at the demo sites with the health, safety, and welfare of the people in the demo sites and within local communities in mind. If effective vaccination will not yet be publicly available during the project implementation stage, public health measures will be taken as is currently being done in China to ensure safety of the project participants and beneficiaries.

If the pandemic persists during the project implementation phase, the project activities that will not involve on-the-ground work will be prioritized and implemented with the help of virtual means. The scheduling of, and action planning for, the hardware-related activities will be reviewed regularly by keeping abreast with the status of the pandemic and the public health situation in the country, in general, and particularly in the project demo sites.

Part III – Country Endorsements

Has the project/program been endorsed by the country's GEF Operational Focal Point and has the name and position been checked against the GEF data base?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

The LoE will be available in the week of October 9, 2020, per the communication between the GEF and the MOF of China on September 27, 2020.

10/29/2020 MY:

Yes, the LoE has been uploaded to the GEF Portal.

Agency Response

Response:

The signed Letter of Endorsement from China's National GEF Operational Focal Point has been uploaded to the GEF Portal on 15 October 2020.

Termsheet, reflow table and agency capacity in NGI Projects

Does the project provide sufficient detail in Annex A (indicative termsheet) to take a decision on the following selection criteria: co-financing ratios, financial terms and conditions, and financial additionality? If not, please provide comments. Does the project provide a detailed reflow table in Annex B to assess the project capacity of generating reflows? If not, please provide comments. After reading the questionnaire in Annex C, is the Partner Agency eligible to administer concessional finance? If not, please provide comments.

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

N/A

Agency Response

GEFSEC DECISION

RECOMMENDATION

Is the PIF/PFD recommended for technical clearance? Is the PPG (if requested) being recommended for clearance?

Secretariat Comment at PIF/Work Program Inclusion

10/1/202 MY:

Not at this time. Please address the comments above boxes.

In addition, please write one more section to address COVID-19 related risks, issues and measures. These include:

1. Availability of Technical Expertise and Capacity and Changes in Timelines;
2. Stakeholder Engagement Process
3. Enabling Environment
4. Financing/Co-financing
5. Future Risks of Similar Crises

Please also indicate whether and how the project can

1. help in reducing the risk of emerging infectious diseases in the future, while increasing the resilience of the ecologic and socio-economy systems;
2. do more to protect and restore natural systems and their ecological functionality;
3. decrease the risk of human/nature conflicts that are related to production landscapes and land use practices;
4. promote circular solutions to reduce unsustainable resource extraction and environmental degradation; and
5. promote innovation in in engaging with the private sector in climate change mitigation.

10/29/2020 MY:

Yes, all comments were addressed and the PIF was revised. The PM recommends technical clearance for the project.

ADDITIONAL COMMENTS

Additional recommendations to be considered by Agency at the time of CEO endorsement/approval.

Secretariat Comment at PIF/Work Program Inclusion

10/29/2020 MY:

1. Please show meeting minutes with key stakeholders including the MIIT and MNR, provincial governments and private companies, and materialize co-financing from the MIIT and MNR and provincial governments.
2. Please materialize co-financing from the private sector, including Yunnan Haoming Fine Phosphorus Chemical Co., Ltd., Yunnan Haokun Phosphorus Chemical Co., Ltd., and Yunnan Xuanwei Phosphorus Power Co., Ltd. In Yunnan province; Weng'an Xingnong Phosphorus Chemical Co. Ltd., Guizhou Yuedu Chemical Co., Ltd. and Guizhou Batian Ecological Engineering Co., Ltd. in Guizhou province; Hubei Xiangyun (Group) Chemical Co., Ltd., Hubei Huangmailing Phosphorus Chemical Co., Ltd., Xiangyang Zedong Chemical Group Co., Ltd. in Hubei province; Sichuan Hongda (Group) Co., Ltd., Sichuan Blue Ocean Chemical (Group) Co., Ltd., and Sichuan Hanyuan Chemical General Factory in Sichuan province.

Review Dates

	PIF Review	Agency Response
First Review	10/2/2020	
Additional Review (as necessary)	10/29/2020	
Additional Review (as necessary)		
Additional Review (as necessary)		
Additional Review (as necessary)		

PIF Recommendation to CEO

Brief reasoning for recommendations to CEO for PIF Approval

Facilitating Cleaner and Energy Efficient Phosphate Chemicals Industry in China (PhosChemEE) Project (GEF ID: 10722) Agency: UNDP; GEF Project Financing: \$9,343,379, Co-financing: \$93,434,000. The objective of the project is to enable extensive application of low carbon and energy efficient technologies in the phosphate mining industry and phosphate chemicals industry in China. The objective will be achieved by delivering many outputs within three components: (1) Green and Low-carbon Development and Operation of Phosphate Mines; (2) Green and Low-Carbon Design and Operation of Phosphate Chemicals Production Facilities; and (3) Green and Low Carbon Design and Operation of Waste Management Systems in the Phosphate Chemicals Industry. The GEF will provide \$6.3 million or 67% of its total budget for three tangible investments to display energy efficient technologies and production processes in phosphate mining and phosphate chemicals industry. This project demonstrates innovation, sustainability and scaling-up in many ways including (1) mainstreaming low/zero carbon production policy in phosphate mining and production industry in line with China's 2060 zero-carbon economy goal; (2) integrating two Chinese ministries (the Ministry of Natural Resources and the Ministry of Industry and Information Technology) to work together to deal with challenges while transforming China's phosphate mining and phosphate production from a high carbon system to a low or zero carbon system; and (3) mobilizing co-financing from private companies, and the national and provincial governments. The project aims at mitigating 36 million tonnes of CO₂ in its lifetime of operation.