

Accelerating construction of energy efficient green housing units in Thailand

Review CEO Endorsement and Make a recommendation

Basic project information

GEF ID

10189

Countries

Thailand

Project Name

Accelerating construction of energy efficient green housing units in Thailand

Agencies

UNEP

Date received by PM

12/9/2020

Review completed by PM

3/17/2021

Program Manager

Ming Yang

Focal Area

Climate Change

Project Type

PIF

CEO Endorsement

Part I ? Project Information

Focal area elements

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, the project is aligned with GEF7 CCM energy efficiency promotion strategy.

3/26/2021 MY:

Please address the following comments that are related to GEF?s policy and partnership and operations:

1. On Table B: No Outputs or Outcomes have been included for the M&E Component
2. On the PMC Proportionality: there is not proportionality in the co-financing contribution to PMC. If the GEF contribution is kept at 4.9%, for a co-financing of \$28,173,247 the expected contribution to PMC must be around \$1,380,489 instead of \$771,570 (which is 2.5%). As the costs associated with the project management have to be covered by the GEF portion and the co-financing portion allocated to the PMC, the GEF contribution and the co-financing contribution must be proportional, which means that the GEF contribution to PMC might be decreased and the co-financing contribution to PMC might be increased to reach a similar level. Please amend either by increasing the co-financing portion and/or by reducing the GEF portion.
3. Although Audits have been correctly allocated to the PMC in the Budget Table, a table in the Portal show Audits charged to the M&E Budget. Kindly note that the total amount stipulated in the Portal table (\$127,200) matches the M&E total amount in the

budget document as the same amount for the audits have been allocated to a Project Accounting and Finance Officer. Please correct the table in the portal.

4. Maps and budget table should be included in the portal.

4/27/2021 MY:

Yes, all comments were addressed and issues were cleared. The PM believes that the adjusted PMC co-financing is acceptable.

Agency Response

04/20/2021

1. UNEP had held discussions with PPO on a similar comment earlier and it was agreed that M&E is presented as separate line to clearly reflect the budget allocated as GEF guideline and thus will not have any outcomes and outputs.

2. The NHA and partners were consulted on the PMC co-finance and it has increased the amount by 150,000 (from KMUT as is mentioned in their letter that their co-finance will include the time, office space and other supplies towards managing the activities to which they contribute). The PMC co-finance now stands at 3.29%. NHA has also made the point that PMC can't be proportionally increased for all levels of co-finance. The GEF grant is 3.14 million USD whereas the investment mobilized is nearly 9 times and total co-finance mobilized is 10 times. The PMC doesn't increase in the same proportionality as the co-finance increases. NHA as the EA has clarified that they will taking the responsibility of fully implementing the project and invest all the time and costs required to deliver the project.

3. The Audit has been removed in the M&E table in the portal.

4. Maps and Budget table has been included in the portal.

Project description summary

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:
Not at this time.

In output 1.5, please indicate the targeted numbers of training workshop and trainees. These numbers will be used as reference for future evaluation on this project.

Output 2.1 (Incremental costs of energy efficient green homes identified and recommendations on funding to support NHA in construction of energy efficient green homes developed and presented to the Government of Thailand for approval) is not clear. It looks like a TA rather than an INV output. Please use the information in Annex M such as the targeted numbers of buildings in the pilot demonstration that are complying with the innovative technology and new energy policy. Please also put floor areas of the total buildings in the demonstration.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

Output 1.5: the project plans to organize at least 3 training workshops during the project period. It is envisioned that at least 60 trainees representing local policy and regulatory bodies and policy advocacy groups will be invited to participate in these workshops.

Output 2.1 the GEF funds will be used to cover the incremental cost of EE and green innovative technologies, enabling the 7 selected demonstration project sites (1373 units) for low cost housing units to achieve the Label No. 5 EE levels which is an aspirational EE and green standard promoted by EGAT. The baseline cost (~22 million USD) of these 1373 units will be financed by NHA from funds approved by the Govt of Thailand, internal savings of NHA, and funds raised from the market, as per its normal financing of such low-income housing units. The GEF funds of USD 1.6 million will cover the incremental cost of EE and green features for the achieving No.5 home energy labelling design. The implementation of pilots will enable accurate estimates of incremental costs, and estimates of energy savings. The objective of the pilots is for NHA to use the experience to assess the energy cost savings and assess the share of these savings that can be captured through the rent and other service fee paid by the housing unit owners. The learned model will be then applied to future projects. Further, NHA will access low cost financing resources (e.g., green bonds) to scale up investment in EE green homes which will be worked into .

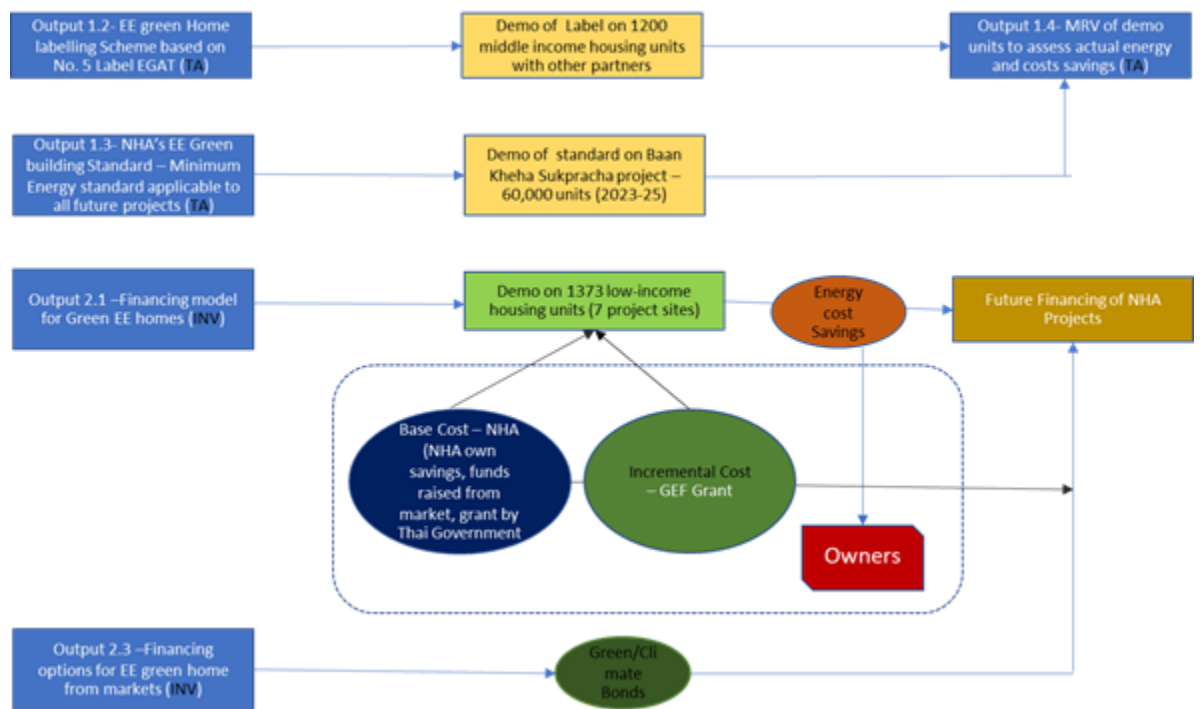
Based on the project experience, NHA plans to build 6.34% of the future low-cost housing units constructed to comply with the No.5 labelling This share will increase to 15.34% by 2036 (10 years after the project ends). The incremental costs of these EE and green investments after EOP will be financed by the abovementioned financial return, budgets from the Thai government, and other green funds mobilized according to output 2.4.

In addition to the above pilot, following pilots will be undertaken to test the outputs of component 1:

(i) Output 1.2 will support EGAT to review and revise the requirements of its No.5 home energy label which is expected to increase the energy efficiency of housing units. EGAT with other partners will pilot the new upgraded label on 1200 units of middle/high income housing units. The objective is to test the feasibility of the updated label and assess the energy cost savings and incremental costs, as well use it as feedback to finalize the updated standard. The construction and incremental costs for EE and green technologies will be financed by the project partners. EGAT has been recognized as one of the main energy efficiency authorities in Thailand, and EGAT has committed to identify the partners during the project period. The EGAT's commitment is reflected in their USD 4.19 million co-financing. The financing of this pilots by partners will be captured as co-finance during the execution of the project.

(ii) Output 1.3 will support NHA (output 1.3) to develop an EE green housing standard which will be the minimum energy and green standard for all the future NHA construction. This standard will piloted on 60,000 housing units with the objective of assessing the energy cost savings, incremental costs and also finetuning the standards based on the feedback from construction. These are fully funded by NHA.

The relationships among these outputs are illustrated in the diagram below.



Described below are additional details on the demonstration projects as well as EE and green homes to be promoted and constructed by EGAT and NHA during the project period and beyond.

1. NHA Pilot Demonstration projects of Energy Efficiency Label No. 5 housing for low income housing units

The GEF Funds will support integration of EE and green technologies into the 7 sites (1373 units) nationwide. The total floor areas of the 7 pilot demonstration buildings are included in the revised Annex M. Preliminary detailed breakdowns of the GEF Funds allocation for each of the 7 pilot demonstration project are shown in the table below.:

| No. | Project sites | No. of Units | Total Building Area (m2) | Incremental cost (USD) | Technology Deployed |
|-----|---------------|--------------|--------------------------|------------------------|--|
| 1 | Petchaburi | 246 | 10,356 | 207,583 | -lightweight bricks -shading devices -Energy saving glass -solar rooftop -LED lighting -other Green measures etc. |
| 2 | Mukdahan | 78 | 3,452 | 180,440 | |
| 3 | Nakornsawan | 196 | 7,956 | 238,571 | |
| 4 | Samutsakon | 196 | 7,956 | 227,143 | |
| 5 | Ayutthaya | 441 | 17,901 | 511,143 | |
| 6 | Sakon Nakorn | 146 | 5,967 | 186,571 | |
| 7 | Loei | 70 | 3,082 | 86,571 | |
| | Total | 1,373 | 56,670 | 1,638,023 | |

2. EGAT No.5 Home Energy Labelling

Preliminary details of the 1,200 housing units with No. 5 home energy labelling are provided below.

| Sites | Technology deploy | Sources of fund |
|--|---|--|
| EGET will apply EE green home labelling scheme (output 1.2) with 400 middle/high income housing units a years. The total units are 1,200 units during project period (2023-2025). The average area is 120 m2/unit and 144,000 m2 in total. | -lightweight bricks -roof insulation -light color wall -energy saving glass -LED lighting | Project owners will fund for both basic costs and incremental costs for EE and greening. |

3.Bann Kheha Sukpracha project

Bann Kheha Sukpracha project includes construction of 60,000 housing units which will be fully funded by NHA. Through output 1.3, the project will upgrade the basic design for Bann Kheha Sukpracha project to a NHA EE and green standard. The 60,000 housing units under Bann Kheha Sukpracha project will be constructed in phases, and 40,000 units of which will be completed during the project period. The average area is about 35 m2/unit and 2,100,000 m2 in total.

These details are added in the appropriate sections of the project document.

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

N/A

Agency Response

Co-financing

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not at this time.

Please double check the amounts co-financing in the co-financing letters and in Table C, and make every number consistent. Please be aware that "Grant" is different from "Equity Investment".

Please elaborate why there is a significant reduction in co-financing from the PIF stage (\$31,257,095) to the CEO ER stage (\$28,954,817).

3/12/2021 MY:

Not at this time. The last bullet of comments on 12/14/202 has not been addressed.

Please get more co-financing to increase the amount from \$28.95 million to \$31.26 million.

3/17/2021 MY:

Yes, comments were addressed and the project document was revised.

Agency Response

March 17, 2021

We missed responding to the comment on Co-financing in the response sheet. This explanation was included in the CEO-ED that was submitted along with the previous

response. The explanation is provided in the section "1a. Changes in Project Design" as the last row of the table explaining the changes.

As explained in the CEO document, reduction of about net USD 2.3 million in co-financing is mainly due to the difference between the cost of pilot projects included in the PIF and the final project. The four housing projects proposed in the PIF have already been taken up for construction to meet the internal NHA deadlines. In place the pilot will be carried out at seven housing projects currently approved by the Thai Government (see Annex E for more details). Further, at the PIF stage the pilots were to be EE but not envisaged to achieve the Label No. 5. Thus the current pilots will be more energy efficiency than those envisaged in the PIF.

March 9, 2021

Thanks for pointing out the mismatch in NHA co-finance as stated in the letter and as reported in the Table C. This error has been corrected. Please note the grant co-finance has been rounded off to closest digit.

GEF Resource Availability

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

The project does not demonstrate a cost-effective approach, because the INV component does not look like a real Investment. Please see comments in Box 2 above.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

Clarifications on utilization of the GEF funds are provided in No. 2 above.

Project Preparation Grant

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes.

Agency Response

Core indicators

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

Since the investment component which is supposed to deliver direct emission reductions is not clear, it is difficult to believe the amount direction emission reduction (155,960 tonnes of CO₂). Please see the comments in Box 2.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

The direction emissions reductions are estimated from:

- (i) housing units with EE and green features constructed during the project period 2021 ? 2026 under the three pilots (67,711 tCO₂ from 62573 units as explained above);
- (ii) use of solar rooftop in the pilot project site of 1373 units for meeting common facility energy demand (14,022 tCO₂); and,
- (iii) adoption of a new EE and Green standard by NHA, and NHA?s target for Energy Efficiency Label No. 5 housing over the coming 10 years as per plan. This will cover 54,200 rental project units as per the current plans over the next 10 years, of which 5,875 will meet the No.5 label and remaining 48,325 will meet the NHA EE green standards. (81,784 tCO₂). These are directly influenced by the project interventions.

Clarification on the estimation of direct emission reduction provided in the revised Annex M

Part II ? Project Justification

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, they are presented on pages 9-14.

Agency Response

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, they are shown on pages 14-19.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion

12/14/2020 MY:

Not completed at this time.

For output 2.1, the CEO ER document on page 28 indicates the following: "The GEF funds (USD 1.6 million) will be combined with the market raised funds (USD 27.03 million) to finance the construction of the pilots. The incremental cost of EE and green features are covered by the GEF funds and the NHA raised loan covers the base costs. The pilot projects are being built under rent-to-buy scheme which removes the need to pay upfront payment for loan purchase".

Please articulate the "incremental cost of EE and green features that are covered by the GEF funds".

Please indicate in detail how the government of Thailand will continue financing such EE buildings after the GEF project funds are over. Who will provide resources to cover incremental costs of EE and green features in the future after the GEF? How to make the EE building financing sustainable?

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

The GEF funds will cover the costs of following EE measures applied in the projects: lightweight bricks, Energy saving glass, insulation to the walls, solar rooftop for street lighting and wastewater and other Green measures. Clarification on the estimation of incremental cost based on technology deployed of the 7 pilot demonstrations are provided in the revised Annex M.

As mentioned in the project document, NHA will adapt the NHA EE Green standard for all its construction as the minimum energy standard. Further, a certain share of this will be constructed to meet the Label no. 5 standards. NHA will utilize three financial mechanisms to continue financing EE green homes in Thailand, and these include: 1) portion of energy cost savings recovered from investments in the pilot and future demonstration projects; 2) Request for government funding as per the government norms for supporting NHA projects based on the costing of projects which will be informed by the incremental cost incurred in the pilot demonstration projects. NHA will initiate these discussions with the government based on information generated from the project; and 3) other financing sources identified as per output 2.4 (e.g. green bonds).

NHA with the help of Asian Development Bank (ADB) in 2020 raised funds to refinance its recently completed and under construction low-income housing projects through social bonds. NHA will use this experience and the outputs of the project to develop a green bond which it will float to finance future housing units to implement energy efficiency and green measures in its low-cost housing units and other projects. An initial meeting with NHA Finance team and ADB was organized to discuss the potential of using the outputs to help develop a green bond. The ADB team will initiate the work with NHA to assess the feasibility of a green bond based on the existing green village scheme of NHA and No.5 Housing Label scheme of EGAT. The feedback will be used by the project to ensure that project established standards can enable NHA raise green bonds.

Further under output 2.4 climate finance too will be explored to identify approaches (e.g., carbon trading) to generate funds for investment in high energy efficiency projects.

It is envisioned that the project will stimulate strong market competition among local manufacturers and suppliers of EE and green materials, hence the average incremental cost will be reduced, making it easier for NHA and other private sector developer to finance construction of EE green homes.

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

The project is aligned with the GEF 7 CCM focal area.

Agency Response

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not at this time. Please see the comments on incremental cost reasoning in Box 2 of Part II ? Project Justification.

3/12/2021 MY:

Not completed.

Please consider increasing co-financing at the level of the PIF stage.

3/17/2021 MY:

Yes, comments were addressed and the project document was revised.

Agency Response

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

It is presented in Annex M (pages 120-36), but not completed.

In the calculation in Annex M, please indicate the floor area of each kind of building units and the total floor areas of all demonstration buildings. The data will be used to estimate the calculation of GHG emission reductions.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

Building floor areas are included in Annex M.

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

In the Section of Sustainability of market development after the project on page 37, please elaborate how the government and EGAT will continue financing EE buildings and how the incremental costs will be covered.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

NHA currently finances its projects from following funds ? Government grants as per the government norms and the category of housing project (affordable housing, low income housing, etc.); NHA's own income; and finance raised by NHA from market. NHA will be adopting NHA EE green standard for all its future projects and a certain percentage of that will be Label No.5. Based on the evidence generated by project on

environmental and climate gains, NHA will open discussion with the government to revise its norms to partially cover the incremental costs. Further, NHA will be using EE housing stock to raise green/climate bonds from the market. As mentioned earlier NHA will also use its experience of raising finance through social bonds and work with ADB in designing its green bond issue which will finance future construction projects. Further, as part of output 2.4 climate finance sources (e.g., carbon finance) will be explored to finance the EE housing units. It is envisaged that in time NHA initiative and the Government mandates for minimum energy efficiency standards will lower the cost of EE materials and technologies to enable provide EE units at competitive prices.

EGAT allocates annual budget to promote adoption of No. 5 home energy labelling to fulfil its mandate given by Govt of Thailand for promoting energy efficiency. This budgetary allocation will be used by EGAT during the course of the project to provide incentives for partners in demonstrate application of enhanced EGAT No. 5 House Energy Label for 1200 units. The remaining costs are financed by the project partners. This funding will continue to be provided by EGAT post project period.

This explanation is added in the Sustainable section as suggested.

Project Map and Coordinates

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Not completed at this time. In **1c. Project Map and Geo-Coordinates** on page 38, please indicate if the project is located in the disputed areas of Thailand and other neighboring countries.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response
March 9, 2021

The pilot demonstration projects are not located in any disputed areas of Thailand and other neighbouring countries. This has been clarified in the Project document.

Child Project

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

N/A.

Agency Response
Stakeholders

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Yes, stakeholder engagement is stated and the information is available on pages 38-46.

Agency Response
Gender Equality and Women's Empowerment

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Yes, all information is presented on pages 47-51.

Agency Response
Private Sector Engagement

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Not completed at this time.

In the section of **4. Private Sector Engagement**, from page 50-51, please add any private investments in housings if any. For example, if any EE housing units are purchased by individual households, the capital cost for the purchasing can be classified as private financing.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

All NHA's housing projects construction are financed upfront by NHA through various financing sources. The finished homes are sold/rented to the individual households for recovering the investments. Thus the NHA co-financing of investment in pilot projects is reflecting the co-financing that will be recovered through sale/renting to individual households. Considering this, we believe adding the capital cost for the purchasing of EE green homes will be double counting of the investment.

The EGAT partners that will finance the pilot 1200 units of upgraded Label No.5 are not identified. The investments from these partners will be captured during the project and reported as **leverage**.

There is no additional private sector investment in EE green homes under the project. However, the private sector investments influenced by the project during implementation will be quantified and reported through regular reporting to GEF.

Risks to Achieving Project Objectives

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, the project has elaborated on various risks including climate change risk and COVID-19 risk from 52-59.

Agency Response

Coordination

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, the institutional arrangement for project implementation and project coordination are described on pages 60-63.

Agency Response

Consistency with National Priorities

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, as described from page 63-65, the project is consistency with the Thai National Priority.

Agency Response

Knowledge Management

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

From October 2020 onwards, the GEF SEC uses a higher review standard regarding knowledge management.

Please highlight the following key ingredients of **8. Knowledge Management:**

1. an overview of existing lessons and best practice that inform the project concept
2. plans to learn from relevant projects, programs, initiatives & evaluations
3. proposed processes to capture, assess and document info, lessons, best practice & expertise generated during implementation
4. proposed tools and methods for knowledge exchange, learning & collaboration
5. proposed knowledge outputs to be produced and shared with stakeholders
6. a discussion on how knowledge and learning will contribute to overall project/program impact and sustainability
7. plans for strategic communications

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

1. an overview of existing lessons and best practice that inform the project concept

Yes, the project builds on existing lessons learned and best practice. Although Thailand has implemented the Building Energy Code (BEC) for over the past three decades, the Thai BEC covers only commercial buildings and is not subject to the new and retrofitted low-rise residential buildings. In general, the low-rise residential buildings in Thailand are neither subject to any energy efficiency requirements, nor Energy Labels. As a result, EE and green housing designs in the residential sector have never been the common practices among developers, builders and building designers. Limited market demand for EE and green building materials has resulted in a lack of market competition, leading to higher EE and green building materials cost in the Thai market. EE and green housing units in Thailand are usually more expensive than standard housing units due to extra costs of EE and green building construction materials.

2. plans to learn from relevant projects, programs, initiatives & evaluations

As outlined in ?6 Institutional Arrangement and Coordination?, the project plans to coordinate with various national and global projects and initiatives to share relevant information and resources. Learning from others will also be achieved through establishment and operationalization of the Project Steering Committee (PSC) and Technical Working Groups (TWGs). The proposed M&E plan as described in ?9. Monitoring and Evaluation? aims to review quality of project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

3. proposed processes to capture, assess and document info, lessons, best practice & expertise generated during implementation

The project will generate and capture expertise, lessons learned, and best practices during the project implementation through multiple sets of project activities which will review available online and offline resources, and stimulate interactions between the project and target stakeholders. Lessons learned on designing and constructing green housing units will be documented through a review and assessment of international and national experiences, best practices, and the pilot demonstration projects implemented by NHA and other project partners. Specific outputs are assigned to each of these activities to ensure that all key findings are properly reviewed and documented. Additional lessons learned and experience shared by all relevant stakeholders during meetings and workshops will also be compiled.

Local best practices and expertise will also be captured through a comprehensive training and capacity building program, which will enable trainees to share their lessons learned and experience. This local knowledge will be utilized in updating training tools and materials for both technical and non-technical aspects.

4. proposed tools and methods for knowledge exchange, learning & collaboration

The project will develop an online database system for certified building construction materials and electrical appliances/equipment suitable for designing and constructing EE

green housing units. The project will also establish a project website, and a repository of all project deliverables for public access during the project and beyond. Project materials produced by GEF incremental activities and in-kind contributions from project partners, such as of the pilot demonstration project case studies with MRV results will be compiled and disseminated through the project website and the online database system.

In addition, knowledge gained from implementation of the project activities will be properly documented and integrated into the relevant capacity building programs for local government agencies/authorities and private sector stakeholders. Sharing of knowledge will also be undertaken through regular meetings organized by the PMU for the PSC, TWGs and other stakeholders. Ongoing cooperation with other international initiatives on EE green homes will also serve as the communication channel for the project share and exchange these knowledge materials international energy efficiency communities.

5. proposed knowledge outputs to be produced and shared with stakeholders

The proposed knowledge outputs to be produced and shared with stakeholders would include but not necessarily limited to:

- ? Online database system for certified building construction materials and electrical appliances/equipment suitable for designing and constructing EE green housing units;
- ? Designs and specifications of basic EE green homes, and more EE and environmental friendly homes that meet No.5 Home Energy labeling;
- ? MRV frameworks for low-rise residential buildings;
- ? Case studies of EE green housing projects with details on techno-economic benefits;
- ? Documents on training and capacity building programs on EE green homes together with training tools;
- ? Marketing tools and materials for communication and awareness campaigns.

6. a discussion on how knowledge and learning will contribute to overall project/program impact and sustainability

Knowledge and learning in the proposed project will be the results of project activities integrated into all the project components, and the abovementioned knowledge outputs will collectively deliver the overall project impact. Knowledge and learning also play an important role in sustaining the project impact as all knowledge outputs will be owned and managed by project partners and stakeholders who will directly contribute and enhance the impacts beyond the project period. For example, training and capacity building programs, and training tools on EE green homes will be managed by the Energy Conservation Laboratory (EnConLab) under KMUTT where technical assistance and training on energy efficiency are regularly organized for relevant stakeholders in Thailand. Through this arrangement, knowledge and lessons from the project will be

updated and passed on to stakeholders who will be engaged in the EE and green housing industry after the project period, hence the sustainability will be strengthened.

The knowledge generated from the pilots on the technical issues of meeting the Label No. 5 standards and NHA green EE standards as well as the energy/cost savings will feed into the finalization of the standards as well as financing policy of NHA. Further, the output 1.1 will instil system capacity in NHA and EGAT to enable regularly review the standards in view of the developments in the region and technology available in the market. The knowledge generated from the pilots will also be shared with DEDE which is responsible for setting the minimum energy efficiency standards. DEDE is a partner in the project and will use this information to design EE standards for low rise housing units in Thailand, a sector which currently has no standards.

The knowledge and experience generated, and capacity provided to private sector contractors that will construct the pilots will inform them of the benefits of EE projects and is expected to result in application of this knowledge in projects beyond NHA. This will also help facilitate the work of DEDE in promoting EE standards for this segment of buildings.

7. plans for strategic communications

The plan for strategic communications will be prepared as part of Output 3.3 of the project, which will include gender aspects, and potential collaboration with manufacturers and suppliers of EE and green building construction materials.

Environmental and Social Safeguard (ESS)

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not at this time.

The ENVIRONMENTAL, SOCIAL AND ECONOMIC REVIEW NOTE (ESERN) (Annex P) could not be found at the project document folder at the GEF Portal as the CEO ER document indicated.

Please resubmit the document.

In the document, please ensure the following information is included:

- overall risk categorization (High/Substantial, Moderate/Medium, Low), and please provide appropriate justification.

- information on any measures to address such risks and impacts during project implementation.

- uploading relevant reports (e.g. preliminary Environmental and Social Risk and Impact Assessment report(s)).

3/12/2021 MY:

Yes, comments were addressed and issues were cleared. The SRIF to address ESS issues is attached to the CEO ER document in MS-Word version.

Agency Response

March 9, 2021

The UNEP document for ESERN is now titled as SRIF. This was attached (title SRIF_CEOED_Thailand_201020). **The SRIF is now added to the CEO Endorsement Document in Annex P.**

Monitoring and Evaluation

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Yes, it is presented on pages 66-67.

Agency Response

Benefits

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

Please use some quantitative numbers to demonstrate the social, local and national benefits on page 68.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

Some quantitative indicators added as mentioned below. These are included in the Benefits section.

By the end of the project, more than 43,126 EE green homes will be constructed to benefit low- and middle-income households. It is estimated that utilization of these EE green home will deliver cumulative electricity savings of 5,708 MWh and reduce GHG emission of about 2,854 tCO₂.

It is envisioned that the project will stimulate at least 10% increase in the number of male and female building designers employed by government and private sector.

Moreover, environmentally sound management of hazardous wastes from discarded and end-of-life lighting products and home appliances will significantly reduce the risk of mercury contamination and other hazardous substances for all citizens as well as global warming potential from refrigerant gasses.

Annexes

Are all the required annexes attached and adequately responded to?

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Not completed at this time.

Annex P is missing. Please try to attach it to the MS-Word document.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared. The Annex P is attached to the CEO ER document in MS-Word version.

Agency Response

March 9, 2021

Annex P was attached (SRIF_CEOED_Thailand_201020). The attached document in the MS-Word.

Project Results Framework

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Yes, it is on pages 71-73.

Agency Response
GEF Secretariat comments

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

N/A

Agency Response
Council comments

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

N/A

Agency Response
STAP comments

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Not completed at this time. Not as UNEP's responses to the STAP comments on pages 75-77, the theory of change is not included in the CEO ER package. Please check the comments of STAP carefully and address them one by one in detail.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

The TOC is attached as separate document.

All the comments were rechecked to ensure all STAP comments were addressed.

Convention Secretariat comments

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

N/A

Agency Response

Other Agencies comments

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

N/A

Agency Response

CSOs comments

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

N/A.

Agency Response

Status of PPG utilization

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

The PPG is fully used as planned (page 78).

Agency Response

Project maps and coordinates

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

Again, at the section showing the project maps, please elaborate if the project area is not in any disputed land areas with the neighboring countries.

In addition, please double check UNEP's role of coordination and implementation to make sure that UNEP will not have any executing function in this project.

3/12/2021 MY:

Yes, comments were addressed and issues were cleared.

Agency Response

March 9, 2021

None of the project sites are in disputed land areas with neighbouring countries. Clarifications on the project areas are provided in the revised CEO document.

UNEP has no executing function in the project. The project will coordinate with the UNEP's Global Alliance for Building and Construction (GLObalABC) to both benefit from the work/experts under the Alliance as well as use the Alliance as a vehicle to share the Thailand experience.

UNDP is not involved in this project.

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

Secretariat Comment at CEO Endorsement Request

12/14/2020 MY:

N/A

Agency Response

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

N/A

Agency Response

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

N/A

Agency Response

GEFSEC DECISION

RECOMMENDATION

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

Secretariat Comment at CEO Endorsement Request
12/14/2020 MY:

Not at this time. Please address the comments above.

3/12/2021 MY:

Not completed. Please address the remainder of the comments.

3/26/2021 MY:

Please address the following comments that are related to GEF's policy and partnership and operations:

1. On Table B: No Outputs or Outcomes have been included for the M&E Component
2. On the PMC Proportionality: there is not proportionality in the co-financing contribution to PMC. If the GEF contribution is kept at 4.9%, for a co-financing of \$28,173,247 the expected contribution to PMC must be around \$1,380,489 instead of

\$771,570 (which is 2.5%). As the costs associated with the project management have to be covered by the GEF portion and the co-financing portion allocated to the PMC, the GEF contribution and the co-financing contribution must be proportional, which means that the GEF contribution to PMC might be decreased and the co-financing contribution to PMC might be increased to reach a similar level. Please amend either by increasing the co-financing portion and/or by reducing the GEF portion.

3. Although Audits have been correctly allocated to the PMC in the Budget Table, a table in the Portal show Audits charged to the M&E Budget. Kindly note that the total amount stipulated in the Portal table (\$127,200) matches the M&E total amount in the budget document as the same amount for the audits have been allocated to a Project Accounting and Finance Officer. Please correct the table in the portal.

4. Maps and budget table should be included in the portal.

4/27/2021 MY:

Yes, all comments were addressed and issues were cleared. The PM recommends technical clearance for this project.

Review Dates

| | Secretariat Comment at CEO Endorsement | Response to Secretariat comments |
|---|---|---|
| First Review | 12/14/2020 | |
| Additional Review (as necessary) | 3/12/2021 | |
| Additional Review (as necessary) | 3/26/2021 | |
| Additional Review (as necessary) | 4/27/2021 | |

**Additional Review
(as necessary)**

CEO Recommendation

Brief reasoning for CEO Recommendations

The objectives of the project are to promote a labelling scheme for low rise homes in the short term and showcase benefits of energy efficient buildings to build energy efficient green homes and to address the greenhouse gas emission reduction goal of Thailand. The project consists of three components: (1) Energy Efficiency Green Home Design and Labelling Scheme; (2) Incentive mechanisms for promoting energy efficient green homes; and (3) Awareness raising and capacity building for promoting energy efficient green homes. With \$3.14 million GEF CCM funding, the project will leverage \$28.94 million co-financing from the Thai government and a power utility company. The project targeted to mitigate 1.46 million tonnes of CO₂, with \$2.13 GEF funding per tonne.

Innovativeness of the project includes: (1) it is the first time for Thailand to promote design and construction of EE green homes, and to enhance access of low- and middle-income households to high quality EE green housing units; and (2) it will introduce for the first time in Thailand the operation of pilot EE green homes with robust GHG MRV frameworks. The sustainability and scaling up of the project are guaranteed by the operation modality of the project: (1) the government and EGAT (power utility company) jointly invest in EE homes; (2) the homes will be sold or rented in the housing market for the low- and middle- income population; (3) individual households will then pay for sustainable use of their homes; (4) the capital inflow from home sales will be further reused to scale up investments.

Possible impacts of climate change and COVID-19 on the project include:

- 1) Changes in management of main project partners and priority of the Thai government;
- 2) Physical risk from climate change impact (e.g. floods, droughts, landslide, etc.) that could affect household life and assets;
- 3) Lack of knowledge and capacity to respond to the COVID-19 outbreak among developers and subcontractors;

4) Delay in construction of the EE green housing pilot projects due to impacts of the COVID-19 pandemic; and

5) The second round of the COVID-19 infections becomes uncontrollable and continues throughout the project period. All project partners and stakeholders are in a wait-and-see situation, causing delay in overall project implementation and outputs.

Measures and opportunities to mitigate and deal with the impacts of climate change and COVID-19 include:

1) The project will conduct direct consultation with key project partners to secure commitments in strengthening institutional coordination. While doing so, as an opportunity of the project, the private sector may be directly engaged;

2) The National Housing Authority of Thailand (NHA) and developers will identify the critical environmental-climate risk factors per zoning of each construction site. The climate risks mitigation measures of pre- and post-construction will be designed and planned to reduce the risks of floods, droughts, landslide. In addition, the climate risk assessment at the pilot projects will be used to inform a standard screening process for all NHA projects.

3) The project will collaborate with the Ministry of Health to get knowledge on COVID-19, and to produce COVID-19 safety policies, guidelines, and best practices to contain and combat the spread of COVID-19 at sites. The potential mitigation measures would include proper hygiene and social distancing standards during working hours, health safety policies at worker dormitories, and provision of access to personal protective equipment, such as masks and hand sanitizers.

4) Prior to the construction phase, the NHA will review the construction work plans with appointed subcontractors and reflect any possible delays and financial impacts due to COVID-19 in the work plans. Eventually, COVID-19 will likely create an opportunity for the government to be more engaged to the GEF project.

5) Maintain regular dialogues and meetings with all project partners and stakeholders through an appropriate communication channels or IT online platforms. Create matrix of outputs and measures to adjust project implementation timeline and budget to reflect the new COVID-19 situation and mitigate delays as needed. Mobilize the stakeholder engagement process, and enhance stakeholder management and health safety precautions.