

Accelerating investment in efficient and renewable district energy systems in Chile

Review CEO Endorsement and Make a recommendation

Basic project information

GEF ID

10087

Countries

Chile

Project Name

Accelerating investment in efficient and renewable district energy systems in Chile

Agencies

UNEP

Date received by PM

12/12/2019

Review completed by PM

2/20/2020

Program Manager

Milena Vasquez

Focal Area

Climate Change

Project Type

FSP

PIF ☐

CEO Endorsement ☐

Part I – Project Information

Focal area elements

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes the project remains aligned with the climate change focal area strategy.

Agency Response

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 PIF/Work Program Inclusion 12/27/2019: Yes, there are some slight changes from PIF but these have been justified.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion 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 PIF/Work Program Inclusion

12/27/2019: Please address comments below:

- We note that the letter from the Ministry of Housing lists the total amount of \$15,050,000 and specifies it as in-kind and there is no explicit separation between grant and in-kind as described in the project document. Please provide an updated letter with this separation made explicit or list all as in-kind (although if that is the case, we would have additional comments on the need for investment mobilized)
- We note that the letter from SOFOFA uploaded to the portal does not include the English translation, although we found it in the Project Document. As a minor comment, please change the titles of the documents uploaded on the portal which right now are just numbers.

2/20/2020: Comments cleared.

Agency Response

February 6, 2020

An updated letter is provided with an explicit separation of in-kind and grant co-finance.

The SOFOFA co-finance letter has been uploaded to the portal with an English translation.

Titles of documents uploaded to the portal have been updated.

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 PIF/Work Program Inclusion

12/27/2019: Potentially if comment above is clarified. Further, the project will mobilize additional investment to support district energy projects, although we understand these cannot be confirmed at the moment. Is there an approximation for this amount and the potential sources?

In addition, we note that the project document includes a letter from the OFP requesting technical support from the District Energy in Cities Initiative, which it is understood appears on the budget as "UNEP International Technical Support Staff" and "UNEP Local Consultant". Please clarify. Considering the District Energy in Cities project has already been supported by the GEF, we find it confusing for it to be included in this project's budget. Additional clarity on the coordination between these two projects is necessary as well.

2/20/2020:

On investment mobilized: thank you for the estimation of additional investment mobilized. We expect this to be reported on during project implementation at MTR and TE. Comment cleared.

On support from the District Energy in Cities Initiative: Comment cleared.

Agency Response

February 6, 2020

On investment mobilized

The total direct investment mobilized to support the development of district energy projects will depend on the size of the projects and can not be confirmed at this stage. However, based on district energy projects already assessed in the country, the range of investment that will be mobilized per project will be the range of USD \$2 million to USD \$15 million. As the GEF project seeks to support three district energy projects, it is estimated that total investment mobilized will be in the range of USD \$ 6 million to USD \$ 45 million. Potential investors include: the regional government, as it is the case in the city of Coyhaique, where the Regional Office of the Ministry of Environment in Aysén is funding the detailed engineering of a pilot project, private operators such as Engie, Veolia or Aguas Nuevas which have shown interest in entering the district energy market in Chile, or national development institutions like CORFO.

On support from the District Energy in Cities Initiative

Yes, it is correct that the technical support from the District Energy in Cities Initiative that the OFP requested is captured in the budget under the lines for “UNEP International Technical Support Staff” and “UNEP Local Consultant”.

The District Energy in Cities Initiative Secretariat received funds from the GEF for the implementation of the GEF-6 project: “Increasing Investments in District Energy Systems in Cities – a SE4All Energy Efficiency Accelerator” in which Chile is one of the four pilot countries. This project aimed at identifying potential areas for the development of pilot projects and raising awareness among national and local authorities on the benefits of district energy. This has increased such authorities understanding of the technology, leading to the creation of a district energy and geothermal department under the Ministry of Energy and a National District Energy Committee consisting of the Ministry of Energy, the Ministry of Environment and the Ministry of Housing. Ultimately, the GEF-6 project has led to the creation of the GEF-7 project, through its impact in creating awareness among Chilean public authorities on the benefits, potential and technological maturity of renewable energy district energy systems. The GEF-7 project complements the GEF-6 project and builds upon it by taking national action on district energy to the next level – support for the concrete development and implementation of renewable energy district energy projects in the country. This goes beyond by strengthening a national institutional structure to coordinate, guide and support the emerging district energy market in Chile and support projects to investment. The GEF-6 project will

formally end in May 2020 but the national coordination structures created during the project will continue operating, ensuring the coordination and efficient transfer of information between both projects.

As noted in the previous paragraph, the GEF-7 project goes beyond the focus and objectives of the GEF-6 project with the aim of supporting the development and implementation of concrete national projects on renewable energy district energy. Consequently, the support from the District Energy Initiative Secretariat for the GEF-7 will take on different focus, now engaging to facilitate the execution of more technical tasks related to the outputs of the GEF-7 project.

The term “UNEP International Technical Support Staff” refers to the technical support that will be provided by the District Energy Initiative Secretariat in Paris to the Agency of Sustainability Energy for the implementation of the activities. The DES Initiative Secretariat will allocate dedicated human resources to provide this support. Its experts will connect the project’s National District Energy Office (NDEO) at the Sustainability Energy Agency with international partners who can bring knowledge and best practices for implementing the activities and to which otherwise the NDEO wouldn’t have access to. National knowledge on district energy continues to be low (despite the positive impact of GEF-6), and thus the initiative’s targeted technical assistance to the project is fundamental to the project’s success in supporting national stakeholders to draw on internal best practices to develop quality products, attract public and private investment, and build national capacity for the development of district energy pilot projects. The tailored technical assistance of the DES Initiative will ensure that the project builds upon the latest international developments and develops national capacity hand-in-hand with leading international experts. This latter is particularly important as Chile has minimal existing capacity on district energy. This collaboration will enable a focused sharing of best practices between the GEF created global Initiative and the GEF national project. Activities and support to be provided included:

- a. Developing tools, methodologies and training material on district energy, drawing on international best practices, including through the global initiative
- b. Building the capacity of and provide technical assistance to the National District Energy Office in the review, enhancement and drafting of pre-feasibility studies, project action plans, project procurement plans, city-wide district energy master plans and investment roadmaps
- c. Provide input on international best practices for the development of a national regulatory framework for district energy, and;
- d. Support the drafting of communications material, the delivery of training sessions and the organization of outreach workshops.

The term “UNEP Local Consultant” refers to the local consultant, based in Chile, that will be hired by the DES Initiative to perform the following activities: a) collect local data for the technical assistance provided by UNEP under components 1,2 and 4, b) update the engineers integrating the NDEO on the activities performed and progress made in each city during the implementation of the project “Increasing Investments in District Energy Systems in Cities”, c) transfer lessons learnt, methodologies and tools developed by the DES Initiative to the NDEO, d) support the Agency of Sustainability Energy on the ground with the organization of capacity building and awareness raising activities and bring into the project local partners of the DES Initiative such as INACAP or Fundación Energía para Todos, and e) make the link with other UN Projects in Chile. In addition to this, the consultant will provide a local link for channeling the District Energy Initiative’s resources on technical assistance, best practices and lessons learnt to the country, in collaboration with the international technical support staff. In this context, the

local consultant will help to ‘translate’ the international technical assistance to ensure that it is relevant and appropriate to the local context, ensuring effective local absorption of such best practices.

Project Preparation Grant

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

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: Yes, according to Annex C all PPG resources have been utilized.

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 PIF/Work Program Inclusion

12/27/2019: Adjustments were made to Table E. While there is an explanation for how Indicator 11 was estimated, there is no explanation on why the number changed so drastically from PIF. Please clarify.

Please also clarify the year 2042 chosen as start date of accounting (it would most likely be closer to 2025 depending on how long it takes to build the systems) and provide a duration of accounting (20 years).

2/20/2020: Comments cleared.

Agency Response

February 6, 2020,

Project core indicator 11 has been amended based on specific technical information of the potential pilot activities. This information was not available at the time when the PIF was developed. The original estimation were based on approximately 350 households on average per pilot project that will be connected to the district heating systems. The typical occupation rate per one-family building was assumed to be 3.1 people. Hence, the total number of direct beneficiary of the three pilots was estimated to 1,085. This was extrapolated to the potential up-scale of up to 10 projects. The estimation in the CEO Endorsement Request has been revised as follows: The estimation is now only looking at the pilot projects as only direct beneficiaries are considered. The pilot project in Temuco has 26 public and 135 residential one-family buildings. The typical occupation rate per one-family building is three people. It is estimated that approximately 400 occupants of the residential buildings and at least 600 users of the public buildings will benefit from the project. The project will be in a mixed area of the city (residential and public buildings), so the estimation is representative also for other cities and can be replicated. Hence, for the three project approximately 3,000 direct beneficiaries are expected.

The anticipated year has been corrected to the start year (2022) referring to the operation of the pilot activities. The accounting / assessment period is 20 years. Annex F: GEF 7 Core Indicator Worksheet has been amended accordingly. The portal has also been updated (it was an error – it should have said 2022 initially).

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes.

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

12/27/2019: Yes.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response**Project Map and Coordinates**

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: There is a map and set of coordinates, but we note these do not actually match the exact place where the project intervention will take place as it has not been yet decided. Please clarify.

2/20/2020: Comment cleared.

Agency Response

February 6, 2020

The map and set of coordinates presented show the cities currently collaborating with the District Energy in Cities. It is anticipated that the pilot activities and the projects applying for support under the National District Energy Financial Support Programme will be located within the areas of these cities. The exact site of the projects are not yet known, as the determination of the project sites is part of the project activities. The text in 1.b and Annex E has been amended

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 PIF/Work Program Inclusion

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 PIF/Work Program Inclusion

12/27/2019: Yes.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

2/27/2020: Our Senior Gender Specialist noted the following. Please address these comments.

There is no evidence that the project has carried out any gender analyses (assessments or equivalent) during project preparation, including in the report on stakeholder consultations. This is a GEF-7 project and as such this project is expected to have completed some kind of analysis prior to approval. Having that said it elaborates on a fairly good gender action plan and measures to engage key partners (i.e. the Regional Observatory for Gender and Ethnical equality) and an analysis of potential differences in behavior of women and men towards the use/acceptance of connecting to a district energy network. In addition, it indicates that it expects to “generating socio-economic benefits or services or women” but it looks like the project in fact only will contribute to improving women's participation and decision making. It also only includes indicators to monitor women's participation. As such, I think it should consider revising the gender tags.

3/19/2020: Comments have been cleared.

Agency Response

3/15/2020.

Gender tags have been updated. The gender analysis and gender action plans have been enhanced.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response**Risks**

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 PIF/Work Program Inclusion

12/27/2019: Overall yes, but climate risks have not been included. In addition, see STAP comments.

2/20/2020: Climate change risks have been added. Comment cleared.

Agency Response

February 6, 2020

Climate risk has been added to Table 7. The impact from climate change may occur on the DES projects and infrastructure leading to physical, project and institutional impacts. This could include:

§ *Changing climate hazard / pattern*, such as increasing average temperature, change in average seasonal precipitation (drought, floods); increasing storm surge height etc.

§ *Physical impact*, decreasing demand for heating in southern Chile, increasing demand for cooling in northern Chile; changing availability of raw material and natural resources (e.g. biomass); changing assets and site conditions; impact on operational performance.

§ *Project and institutional impact*, incl. technical (lowered energy output) and financial performance (increasing CAPEX and OPEX)

The risks are expected to be moderate and manageable. Financial, environmental and social underperformance or failure of the project and the pilot activities is unlikely. The project feasibility studies will consider potential changing conditions in its sensitivity analyses and design the plants accordingly.

Resilience towards climate change impact is one of the added benefits of developing district energy systems. The installation of the piping network and the connection of buildings to the network entails the biggest part of the total investment costs required to build a district energy system and it remains unchanged independently on the changes that may be implemented over time on the energy source or energy sources used to heat the water supply by the network. This means that if variations in the availability of raw material or natural resources used as energy source for the system occur due to climate change, the infrastructure can be adapted to use a different energy source (e.g. solar energy instead of biomass, waste heat instead of biomass, geothermal), or a combination of existing available energy sources, providing more flexibility to the system to adapt to potential impacts of climate change. If a demand for district cooling develops over time due to a rise in temperatures, the system could also be adapted to generate both, heating and cooling.

Since not all locations of the district energy systems are known yet the project will undertake a climate risk screening for each project, once these are identified in accordance with STAP guidance on climate risk screening. This will include a climate vulnerability assessment and plan actions as part of the feasibility studies to increase the resilience of the project's outcomes.

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 PIF/Work Program Inclusion

12/27/2019: UNEP implemented projects are listed, but there is no discussion of other ongoing projects in Chile in climate change mitigation, such as the [Supporting the Chilean Low Emissions Transport Strategy CLETS](#) project. Please clarify.

2/20/2020: Comment cleared.

Agency Response

February 6, 2020

The Ministry of Environment, the Ministry of Energy and Ministry of Housing will ensure the coordination with other ongoing relevant GEF-financed projects in Chile in climate change focal area. A list of most recent GEF project on climate change (GEF-5 to GEF-7) have been added to section 6 of the CEO Endorsement document. Those projects executed by the ministries and those with DES relevance are highlighted. The Ministries (Energy, Environment and Housing) involved in the project will ensure coordination with the other projects, in particular those in which they are acting as Executive Agencies. Additionally, the section also presents and discusses other non-GEF funded projects that might be relevant for the project success and would benefit from coordination.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response

Monitoring and Evaluation

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes, however we note that audits have been added to the M&E plan instead of the PMC. Please address.

2/20/2020: Comment cleared.

Agency Response

February 6, 2020

The audits have been moved from the M&E budget to the PMC. Annex I-1 and J have been amended accordingly.

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 PIF/Work Program Inclusion

12/27/2019: Yes.

Agency Response**Annexes**

Are all the required annexes attached and adequately responded to?

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: No, see below.

2/20/2020: Comment cleared.

Agency Response

February 6, 2020

Noted, responses included below.

(In response to the GEF sec comments on recommending CEO Endorsement):

- Project start date and completion date has been adjusted to take into account the review process.
- We confirm that the CEO Endorsement Document submitted with annexes is to be considered as the detailed Project Document by UNEP.

March 15, 2020

Budget updated with "Administrative from UN Environment" removed.

Project Results Framework

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Yes, however, we note that there are no indicators that will support the monitoring and reporting related to the core indicators for which there are targets. Please add to the results framework.

2/20/2020: Comment cleared.

Agency Response

February 6, 2020

The Project Results Framework has been amended and the project core indicators (6 and 11) on GHG mitigation and direct beneficiaries have been added.

GEF Secretariat comments

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

Council comments

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

STAP comments

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: 12/27/2019: STAP comments have not been responded to. Please find the STAP screening and provide written responses to the issues and questions raised, particularly on theory of change (which is now provided in the annex), GHG benefit calculation, ensuring there are "indicators or methodologies to demonstrate how the global environmental benefits will be measured and monitored during project implementation", climate risk and the need "to assess the sensitivity of the physical project outcomes (new infrastructure and equipment) to climate change and prepare adaptation actions", and more specific risk identification and management.

2/20/2020: Responses to STAP comments have been added and they are adequately addressed. Comment cleared.

Agency Response

February 6, 2020

Annex B: Response to Project Reviews has been added to the CEO Endorsement Request document providing responses and action undertaken to address STAP's comments on the PIF.

Convention Secretariat comments

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

Other Agencies comments

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

CSOs comments

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

Status of PPG utilization

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: Yes.

Agency Response

Calendar of expected reflows (if NGI is used)

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: N/A

Agency Response

Project maps and coordinates

Secretariat Comment at PIF/Work Program Inclusion 12/27/2019: Yes, but see comment above.

Agency Response

February 6, 2020

See response above.

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

N/A

Agency Response

GEFSEC DECISION

RECOMMENDATION

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

Secretariat Comment at PIF/Work Program Inclusion

12/27/2019: Not yet. Please address comments above. Please also move the expected implementation date to a later date considering the review process. Please confirm if the CEO Endorsement Document submitted with annexes is to be considered as the detailed Project Document by UNEP.

2/20/2020: All technical comments have been addressed. PM recommends CEO Endorsement.

2/27/2020: Please address additional comments under the Gender & Women's Empowerment. In addition, please remove the "Administrative from UN Environment" under the PMC in the budget, as we are only clearing the technical execution support.

3/19/2020: Administrative from UNEP under the PMC has been removed. Comments under gender have been addressed. All comments cleared. PM recommends CEO Endorsement.

Review Dates

	Secretariat Comment at CEO Endorsement	Response to Secretariat comments
First Review		
Additional Review (as necessary)		
Additional Review (as necessary)		
Additional Review (as necessary)		
Additional Review (as necessary)		

CEO Recommendation

Brief reasoning for CEO Recommendations

The objective of this project is to accelerate the decarbonization of the heating sector in Chile by fostering the deployment of district energy systems. In cities in central and southern Chile, around 70% of the total energy consumption is used for heating, usually through inefficient and polluting woodstoves and gas boilers. District energy can be up to 50% more efficient and reduce emissions by 90% in comparison. In addition, district energy creates synergies between the production and supply of cooling, heating, hot water and electricity, and can be integrated with municipal systems such as power, sanitation, sewage treatment, transport and waste. Building on the work already underway in the country, this project will unlock investment to build the first round of demonstration projects and kick-start the district energy market in Chile.

The project is aligned with the climate change focal area objectives, specifically with CCM1-3 Promote innovation and technology transfer for sustainable energy breakthroughs for accelerating energy efficiency adoption, and with on-going policy actions such as the Energy Policy 2050, National Decontamination Plans, National Energy Route 2018-2022, National Action Plan on Climate Change and Chile's NDC.

The project includes the following components:

1. Establishment of a National District Energy Office
2. Demonstration of financial feasibility of district energy projects.

3. Designing an enabling regulatory framework at national and local level.

4. Outreach, trainings and dissemination of results to scale-up the market.

This project builds on the work of the GEF-6 Global District Energy Accelerator, which has created momentum and identified a pipeline of potential demonstration projects, which will be brought to market by supporting local governments to bring projects to tender, thus initiating the first district heating market in Latin America.

Co-financing of \$16.3 million comes from the government, \$15 million in grant (investment mobilized) and \$837,000 in-kind, as well as in-kind from research institutions and the private sector, INACAP (\$300,000) and SOFOFA (\$100,000), UNEP (\$50,000) and the Embassy of Denmark in Chile (\$18,000).

It is estimated the project will reduce GHG emissions by 3.4 million tCO₂e through the implementation of district energy demonstration project and scale-up by the market. It will also lead to 5.7 billion MJ in energy saved and over 3,000 direct beneficiaries.