

UNEP GEF PIR Fiscal Year 2022

Reporting from 1 July 2021 to 30 June 2022

1. PROJECT IDENTIFICATION

1.1. Project details

Identification Table	GEF ID.: 10087	Umoja no.: SB-015156
Project Title	Accelerating investment in efficient and renewable district energy systems in Chile	
Duration months	Planned	36
	Extension(s)	-
Division(s) Implementing the project	Climate Change Mitigation Unit, Energy Branch, Economy Division	
Executing Agency(ies)	Energy Sustainability Agency on behalf of the Ministry of Energy of Chile, Ministry of Environment of Chile	
Names of Other Project Partners	District Energy in Cities Initiative (UNEP)	
Project Type	Full Size Project	
Project Scope	National	
Region	Latin America and the Caribbean	
Countries	Chile	
Programme of Work	Programme of Work 2020-2021, subprogramme 1: climate change.	
GEF Focal Area(s)	Climate Change	
UNSDCF / UNDAF linkages	<p><u>Chile UNSDCF 2019 - 2022</u></p> <p><u>Effect 7</u> By 2022, the state institutional framework at the national, regional, and local levels is strengthened, for the mitigation and adaptation to climate change, the sustainable management and preservation of natural resources, ecosystems and their biodiversity, as well as the management of socio-environmental risks and conflicts.</p> <p><u>Effect 8</u> By 2022, productive and social sectors increase their environmental sustainability through innovation and governance mechanisms, according to the international environmental norms and standards.</p>	
Link to relevant SDG target(s) and SDG indicator(s)	<p><u>SDG 11.6:</u> By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</p> <p><u>Indicator 11.6.2:</u> Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)</p> <p><u>SDG 7.3:</u> By 2030, double the global rate of improvement in energy efficiency</p> <p><u>Indicator 7.3.1:</u> Energy intensity measured in terms of primary energy and GDP</p>	

	<p><u>SDG 7.b</u>: By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</p> <p><u>Indicator 7.b.1</u>: Investments in energy efficiency as a percentage of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services</p> <p><u>SDG 13.2</u>: Integrate climate change measures into national policies, strategies, and planning</p> <p><u>Indicator 13.2.1</u>: Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)</p>	
GEF financing amount	USD 2,141,781	
Co-financing amount	USD 16,355,000	
Date of CEO Endorsement	27/03/2020	
Start of Implementation	11/06/2020	
Date of the first disbursement	14/8/2020	
Total disbursement as of 30 June 2022	\$388,177	
Total expenditure as of 30 June 2022	\$298,301	
Completion Date	Planned	15/05/2023
	Revised	n.a
Expected Terminal Evaluation Date	15/05/2023	
Expected Financial Closure Date	31/05/2024	

## 1.2. Project description

<p>The project aims to accelerate investment in efficient and renewable district energy systems in Chile by addressing key barriers identified: 1) high-up front costs, 2) low energy efficiency and lack of centralized heating systems in existing buildings, 3) lack of capacity and resources of local governments, 4) high perception of risks and consequent high financial cost, 5) lack of institutional coordination at national level to promote the technology and disseminate best practice, standardized methodology and tools, 6) lack of an enabling regulatory framework and 7) lack of awareness and misperceptions on district energy purpose in the last ten years. As long-term results, the project is expected to considerably reduce air pollution due to particulate matter by replacing inefficient and polluting individual stoves, reduce energy consumption by increasing energy efficiency, reduce GHG emissions by introducing renewable sources, and reduce reliance on imported energy by introducing local energy sources, among other positive externalities. The project's work plan has four components:</p> <p>Component 1: Establishment of a National District Energy Office (NDEO).</p>
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<p>The goal is to establish a national institutional structure to coordinate, guide and support the emerging district energy market in Chile, by establishing a National District Energy Office (NDEO) at the Agency of Sustainability Energy. The office will also provide technical assistance to local governments and the private sector.</p> <p><u>Component 2:</u> Demonstration of the financial feasibility of district energy projects. The aim is to support the construction of a set of exemplary district energy projects in Chile, demonstrating that affordable, reliable, and low-carbon heat/cold can be delivered with manageable levels of risk. In addition, a proposal of a National District Energy Financial Support Programme, managed by NDEO in coordination with other existing financing programs from the Ministry of Environment, the Ministry of Housing, or others (e.g. the Productive Development Corporation), will focus on providing project development and capital support to build the first round of demonstrative projects in Chile.</p> <p><u>Component 3:</u> Designing an enabling regulatory framework at the national and local level. This component seeks to develop an enabling regulatory framework that sets up the rules for the construction, operation, and incentivizing of renewable and energy-efficient district energy projects, by designing national, regional, and city-level policies and regulations.</p> <p><u>Component 4:</u> Outreach, training, and dissemination of results to scale up the market. This component will focus on scaling up results by collecting and disseminating best practices and results of activities implemented under components 1 to 3 and building capacity and knowledge through the development of guidelines and delivery of training tailored to the needs of key stakeholders (local governments, building developers, investors and operators).</p>
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### 1.3. History of project revisions

Version	Date	Main changes introduced in this revision
Rev1	23/02/2021	Re-phase the unspent balance to future years and to reallocate travel budget lines due to movement restrictions of the COVID-19 situation.

## 2. OVERVIEW OF PROJECT STATUS

### 2.1. UNEP Subprogramme(s)

<p>Insert the Subprogramme(s) and biennia of the PoW to which the project contributes</p>	<p><b>Specify the relevant Expected Accomplishment(s) &amp; Indicator(s)</b></p> <p>Programme of Work 2022-2023 Climate action subprogramme</p> <ul style="list-style-type: none"> <li>• <b>Outcome 1B:</b> Countries and stakeholders have increased capacity, finance, and access to technologies to deliver on the adaptation and mitigation goals of the Paris Agreement.</li> <li>• <b>Indicator (ii):</b> Amounts provided and mobilized in \$ per year in relation to the continued existing collective mobilization goal of the \$100 billion commitment through to 2025 with UNEP support.</li> </ul>
<p>The project has managed to effectively mobilize a co-financing of \$823,333, of the 16,355,000 expected towards the end of the project. On the other hand, has developed two technical and planning regulations that are in the process of adoption at the National Level. Additionally, the project has received a total of 26 applications, exceeding the initial expectation of 10 for the call for projects, of this total 18 were admitted. The National District Energy Office, constituted by the project, supports the development of 11 projects that arrives to a pre-feasibility report, and 5 have a favorable evaluation to receive financial support for construction. In the second semester of 2022, it is expected to effectively implement up to 3 pilots of these 5 district energy projects by the capitalization of at least US\$ 10,000,000, benefiting an average of 129,532 people. Furthermore, these pilots will have their own district energy investment roadmaps developed and there will be integrated into the city-wide planning cycle.</p>	

**2.2. GEF Core Indicators (for all GEF 6 and later projects):**

GEF Core Indicators	Indicative expected Results	
Indicator	Expected values at	
6. Greenhouse Gas Emissions Mitigated	end of project	40,000 tCO2e
11. Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	end of project	3,000 (approximately 50% of which will be women)

**2.3. Implementation status and risk**

	FY 2021	FY 2022
PIR #	1 <sup>st</sup>	2 <sup>nd</sup>
Rating towards <b>outcomes</b> (section 3.1)	S	HS
Rating towards <b>outputs</b> (section 3.2)	S	S
<b>Risk rating</b> (section 3.3)	L	M

Summary of progress:

The reported period was mainly characterized by a restructuring of the governing bodies due to the presidential elections of November 2021, which were only formalized in March 2022. This process involved changes in authority both in the Chilean Ministry of Energy and in the Energy Sustainability Agency. In this context, the National District Energy Office (NDEO) has remained fully operational. At the same time, the team successfully implemented a plan for repositioning the project under the new authorities, this strategy was supported by a Mission of UNEP in March of this same year. In this opportunity, the focus was put on the analysis of different strategies to give sustainability to the NDEO, such as including it in the annual budget of the Ministry of Energy and talking with the new authorities about the 8th Call of the GEF and evaluating future projects to work together. The new government has not only provided support for the objectives of the GEF Project but has also established the goal of building at least one energy project in Chile during this administration. On the other hand, the Executive Direction of the Agency of Sustainability Energy was assumed by the former Head of the HVAC Line and director of the GEF Project, Rosa Riquelme, which also reinforces the Agency's commitment to the success of the Project. Additionally, the HVAC and Buildings Lines were merged, and renamed the Territories and Buildings Line, thereby reinforcing the synergies that may exist between the GEF Project and other work areas related to energy efficiency in buildings

In addition, the project team continued to work on the project to ensure that the schedule and quality of the products are not affected. In this sense, the NDEO closed a total of 26 applications, exceeding the initial expectation of 10 for the call for projects, of this total 18 were admitted. To date, 11 projects have a pre-feasibility report and 5 have a favorable evaluation to receive financial support for construction. Within the month of July 2022, all 18 projects are expected to be completed from pre-feasibility.

The change of government in March 2022 forced the project to extend the validation of the draft recommendations prepared on national financial instruments to promote the construction of the pilots. It is expected to have this validation during the second half of 2022. Added to this delay is the difficulty of identifying the permitted land uses for the installation of thermal power plants in cities in accordance with our land use regulations. Added to the land use regulation barrier, the COVID pandemic has delayed the response times of the project beneficiaries to make site selection decisions to locate the power plant and decide on the real interest of the organizations in the execution of the project. Project. These facts, among others, have

delayed the request for Line 2 execution, resulting in a delay in the delivery of resources for the construction of the pilots and affecting the execution of the program budget. However, the project presented jointly by the municipalities of Recoleta and Independencia has advanced discussions with clients and has managed to reach the bidding commitment. In second place is the project presented by the Municipality of Talcahuano, which is in the process of negotiating with industries to locate the thermal power plant. With these 2 projects, a capital of 12 million dollars would be raised, exceeding the goal of 10.

Regarding the revision of the regulations as a result of this project, the Ministry of Energy is close to presenting to Congress the district energy bill, seeking to unblock the regulatory barriers to the development of projects. In addition, the Ministry of Housing and Urbanism introduced a modification to the General Ordinance of Urbanism and Construction, which is under review by the Comptroller General of the Republic, and which would allow thermal power plants to be located on land classified as facilities, significantly expanding the possibilities of building district energy projects in cities. This modification would allow another 3 projects to overcome the land use barrier moving towards financing.

In addition, 3 normative guides have been published for the implementation of district energy projects and a guide for local and regional governments to promote district energy projects. Regarding the transfer of knowledge, 4 massive events have been held to disseminate success stories and topics related to the promotion of district energy, with an audience of 237 people, of which 27% are women. As a result of these events, requests for support were received from 3 new municipalities and several private companies approached for more information. In July and August 2022, 3 events are planned for the private and public actors involved and interested in the implementation of these pilot projects to present the decision-making process and agree on guidelines for implementation.

**Rating towards outcomes:** Aligned with progress reported in section 3.1.  
**The rating is HS** because 6 of the outcomes are rated HS, except 2 that are S ratings that are due to not having enough certainty yet to qualify them as HS. Is important to mention, as indicated in the previous report, that the Objective "Greenhouse Gas Emissions Mitigated" will be reviewed with the aim of assessing whether the indicator target needs to be adjusted based on the project's projected impact.

**Rating towards outputs:** Aligned with progress reported in section 3.2.  
**The rating is S** because although the C1 is HS, C2 S, and C3 S, the main difficulties are in C2 regarding the delays in the tender of the pilot projects. Once this issue is resolved the project will quickly balance the delay in the work-plan and in the budget implementation.

**Overall risk rating:** Justify consolidated project risk given in Table A in section 3.3.  
 The overall rating is M because most critical risks in terms of compromising outcomes and outputs rate M, especially those related to pilot project tender.

#### 2.4. Co-financing

<p><b>Planned Co-finance Total:</b> (USD 16,355,000)</p> <p><b>Actual to date:</b> (US \$823,333)</p>	<p>The co-finance progress is observed according to what was planned. All the institutions and organizations have developed activities that are contributing to the project, mainly in terms of man-hours in projects analysis, coordination meetings, Project Steering Committee, events, and technical assessment, among others. Co-financing mobilized to date is US \$823,333. Regarding the Co-financing in loans from the Ministry of Housing and Urbanism (15 million dollars from the Thermal Refurbishment Program of Homes), this has not yet been executed according to workplan, due to delays in the construction and operation tender for the pilots.</p>
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#### 2.5. Stakeholder engagement

<p><b>Stakeholder engagement</b></p>	<p>Regarding the Stakeholder Group of the Project the engagement at an institutional level, the support of the Ministries of Energy, Environment, and Housing has been fluid, as well as the technical advisory and coordination with the UNEP Cities Unite. The Agency of Sustainability Energy has managed to add the support of other units within the institution, as well as some external partners.</p>
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	<p>The Ministry of Energy has maintained an active role as an integral part of the PMU and presiding over the Project Steering Committee.</p> <p>Other organizations are expectant to the market progress and have delivered support in international activities:</p> <ul style="list-style-type: none"> <li>• International support from Business Sweden has grown, as they are interested in developing the business case of one of the potential pilot projects among the projects that we supported into the call.</li> <li>• The HNDU in the UK has continued to guide the NDEO with their experience on internal procedures and terms of reference for the different levels of studies, which has served as input of the current terms of reference in the project of Recoleta and Independencia.</li> <li>• Heat Academy from Sweden has co-led a series of three international webinars hosted by the NDEO and the national Partner INACAP during 2021.</li> <li>• Danish Energy Agency is interested in collaborating with our country in the regulation development to reinforce the technical issues of the district energy law that is preparing the Ministry of Energy of Chile.</li> <li>• Danish Board on District Heating receive a Chilean delegation in Copenhagen, Denmark to share the market development and the business models usually implemented in this country and they are open to collaborating with the Chilean institution for the promotion of district energy in Chile.</li> <li>• Low Carbon Business Action – LCBA – is a business platform financed and supported by the European Union aimed at developing B2B relationships between providers of low carbon technologies in the EU and companies seeking sustainable solutions in Latam. Several meetings and conversations have been done to show the advance of the district energy project with the LCBA scope.</li> </ul> <p>Regarding national associations:</p> <ul style="list-style-type: none"> <li>• SOFOFA continues its support for the development of an Environmental Offset Methodology, which could serve to leverage business-to-business co-funding of projects located in particulate matter-saturated areas of Chile.</li> <li>• Private companies and associations like the Chilean Chamber of Construction and the Chilean Biomass Association have participated in events and provided interviews and information for the development of two Guidelines related to technologies and benefits of the district energy systems.</li> <li>• The Ministry of Energy, UNEP, and the NDEO has uported the coordination of the first Diploma on District Energy in Chile, held by the Universidad de la Frontera (UFRO) located in Temuco.</li> <li>• The UFRO is organizing the second version of the Diploma on District Energy for the second semester of 2022.</li> </ul> <p>The District Energy in Cities initiative and the NDEO developed a tailored tool, applicable to every context of a project aiming to identify key roles and actors, prioritize them according to interest and influence, and elaborate a communication strategy for their active engagement. The project owners are in close cooperation with the NDEO and maintain interest to move toward the implementation stage. At the moment, over 200 meetings have been held with different publics, including project owners and different key actors like key clients, local planning departments, potential prosumers, utilities, and landowners, among others.</p>
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**2.6. Gender**

<p><b>Gender mainstreaming</b></p>	<p>As it was conceptualized in the Action Plan for gender female participation has been prolific at the level of leadership and decision-making roles, both in the</p>
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	<p>Project Stakeholders Group and in external stakeholders (municipalities and other institutions)</p> <p>Three women are part of the National District Energy Office (60%). In fact, the terms of reference for the hire of the 3 professionals of the NDEO and the lawyer consultancy recognized and encouraged the application of women.</p> <p>A 33% of the projects declared admissible (the projects that we work with) have a woman as focal point.</p> <p>Regarding public events, female participation has been around half that of male participation, which represents an acceptable figure when compared with what can be observed in other similar instances or in group participation of energy policy work in Chile. Specifically, a 44% of the exponents of all these events were women.</p> <p>In general, efforts have been made to quantify by gender the participation in the different activities and products, in addition to encouraging gender parity in them. In the registration forms generated, the gender of the person was asked in order to know how many women participated in the activity. As for the speakers of the webinars, efforts were made to encourage the participation of women, having several of these webinars with gender parity. On the other hand, in the generation of the bidding bases for line 2, extra points are awarded for having a woman project manager, and also for having women in the work team. In addition, for the application to line 1, it was suggested that the person in charge of projects be a woman, in addition to quantifying after the application the men and women in charge of projects. Finally, in the guides made, specifically in the beneficiary guide, an attempt was made to have the same number of men and women interviewed.</p> <p>Regarding with the documents that have been created in the program, as well as procedures, methodologies, guidelines, open call, and the terms of reference have included an inclusive language.</p>
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**2.7. Environmental and social safeguards management**

<p><b>Environmental and social safeguards management</b></p>	<p>The project was categorized under the Moderate Risk.</p> <p>The execution of the project has been carried out in accordance with local environmental regulations. The pilot and investment projects were designed considering emission criteria and incorporating dust reduction systems in the district energy plants. This allows for a minimal impact on air pollution and the balance of emissions between the baseline and the project always favourable to generating reductions in such pollutants.</p> <p>During the assessment of possible investment projects, the NDEO carried out an analysis on energy efficiency, emission reduction, and cost reduction compared to the baseline (current situation). When the pilot projects go to execution, an environmental assessment will be contemplated that considers the efficient and sustainable consumption of energy, water, and other resources.</p> <p>All projects that generate an environmental impact in Chile must be submitted to the Environmental Impact Assessment System of Chilean environmental legislation. In addition to the mandatory measures, the NDEO will request, in the construction and operation concession ToR, a waste management plan.</p> <p>On the social impact of district energy systems, this was contemplated in the pre-feasibility evaluation of the projects. This included with regards to the impacts on direct and indirect beneficiaries of the DES. All projects were evaluated using local social impact methodologies that consider all health impacts of air pollution in terms of premature death and morbidity. This is a key element in the financial scheme of local resources for district energy development because decision makers consider environmental and social information for prioritizing projects. In addition, when the projects advance to execution and receive financial support from the GEF Project, consideration of social impact will also be incorporated into the primary engineering studies (feasibility) with a higher level of precision.</p>
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	<p>In general, heating in Chile is precarious, in the sense that consumption is generally below the level required for a situation of thermal comfort. In more vulnerable sectors in terms of socioeconomic situation, there are situations of energy poverty. The projects under evaluation and that incorporate residential users offer a substantial decrease in this gap, in the sense that the DES are designed for a situation of thermal comfort.</p> <p>Another social benefit that can be mentioned is related to the formalization of the biomass market in Chile, one of the main sources of energy in the primary energy matrix and one of the main sources of energy considered for DES. The Talcahuano and Talca projects (2 of the candidates to receive financial support) consider biomass as a base energy for the DES, in addition to other projects assessed by the NDEO up to now. In the case of the city of Puerto Williams, there are two projects in assessment and in which the insufficient availability of the resource in the usable format in boilers has been confirmed, precisely because there is not enough demand for the resource to justify a local offer. The DES allow the development of a specific demand for biomass that can stimulate the development of a local supply of the resource, providing formal jobs, fiscal income through the payment of taxes that are not paid in the current informal market, and new markets for current suppliers. The Agency of Sustainability Energy has worked to formalize the firewood market in Chile, providing infrastructure capabilities and quality certification to firewood providers, with the possibility of opening to industrial markets through other formats such as pellets or chips. The DES constitutes an important opportunity to open markets to these producers.</p> <p>Regarding the secondary effects of reducing local contamination by particulate matter, the health benefits due to lower morbidity and premature mortality, associated with critical episodes that produce cardiorespiratory diseases, can be mentioned. These benefits have been quantified and valued economically in previous district energy studies carried out in Chile, and the social benefits are large.</p> <p>Another benefit to highlight is the development of local capacities, both in public institutions like the municipalities themselves, as well as in suppliers.</p> <p>The development of DES also allows end users to be included in the implementation of projects, through citizen participation. The medium and long-term planning of the DES can be promoted through local planning instruments, such as the Local Energy Strategies (LES). The Agency of Sustainability Energy also works with the municipalities, supporting them in the development of LES, in which the evaluation of the district energy potential is being encouraged.</p> <p>Regarding social impacts,</p>
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**2.8. Knowledge management**

<p><b>Knowledge activities and products</b></p>	<p>The NDEO has organized 4 knowledge transfer events. The first was the webinar "District energy is possible in Chile", organized in conjunction with INACAP and with the participation of exponents from ONED and the Veolia company. The other 3 were a series organized jointly with the local partner INACAP and Heatnetwork Academy International, in English with simultaneous translation into Spanish: 2) Webinar "District Energy as an alternative to decarbonization", 3) Webinar "Use of local heating and cooling resources in District Energy Systems", 4) Webinar "Best Practices for Engaging End Users in District Energy Systems". In total, the public served was 237 people, 27% women.</p> <p>Some activities not contemplated in the Work Plan have also been carried out, such as the training sessions provided under the Diploma in District Energy in Chile, held by the Universidad de la Frontera (UFRO) based in Temuco. The UFRO team has organized the topics and speakers with the support of the Ministry of Energy and the UNEP-DTU Partnership. A total of 25 students attends the Diploma, and the municipalities of Recoleta, Renca and Talcahuano, as well as the Regional Ministerial Secretary for the Environment of the Aysén Region</p>
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	<p>were awarded with full scholarships to take the Diploma. The Universidad de La Frontera (UFRO) requested support from the NDEO to facilitate speakers in the second version of the Diploma in District Energy, which will be held during the second semester of 2022.</p> <p>The Universidad de La Frontera (UFRO) requested support from the NDEO to facilitate speakers in the second version of the Diploma in District Energy, which will be held during the second semester of 2022. There will be 6 scholarships to attend the Diploma, and the number of beneficiaries will be equally distributed between men and women.</p>
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**2.9. Stories to be shared**

<p><b>Stories to be shared</b></p>	<p>The NDEO closed an Open Call for the support of district energy projects with 26 applications received and 18 admitted, widely exceeding initial expectations, despite the low initial application rate that motivated an active dissemination strategy with municipalities supported by the District Energy in Cities Initiative (GEF-6), with specialized consultants and with business associations. Of the 9 projects that have graduated with a pre-feasibility, 2 candidates emerged to be financially supported by the GEF Project. The project presented jointly by the Municipalities of Recoleta and Independencia has managed to advance towards the implementation phase, with a good economic performance due to the fact that it incorporates several health establishments and university faculties and is currently in the drafting phase of the ToR for the feasibility studies. Another project that has achieved a good degree of progress is the one presented by the Municipality of Talcahuano which incorporates a hospital and a group of 412 neighbouring houses, although it has not yet managed to advance towards implementation, since a land to locate the thermal power plant is being negotiated with the industries of the sector. Between both projects, a capital of 12 million dollars would be raised, at least 129,532 people would be directly benefited and savings of 5,439 tons/year of CO<sub>2</sub>eq would be generated.</p> <p>In March 2021, the new government administration of President Gabriel Boric was installed. The commitment made during the campaign to support the implementation of district energy projects in the national territory was ratified by the Ministry of Energy, setting the goal of implementing at least one district energy project in the country during this mandate and doing a diagnosis and promotion of district energy in the territory, involving the Regional Ministerial Secretariats. The Head of the Sustainable Energy Division of the Ministry of Energy travelled with the directors of the GEF Project to Copenhagen (indicate the event), which allowed exploring financial schemes with different financial institution, international cooperation for encourage the regulatory framework development of Chile and stablish contact for future consultancy of the implementation stage with the district energy industries board.</p>
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### 3. PROJECT PERFORMANCE AND RISK

#### 3.1 Rating of progress towards achieving the project outcomes

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Summary by the EA of attainment of the indicator & target as of 30 June 2022	Progress rating <sup>1</sup>
<b>Objective:</b>	Number of Chilean cities with district energy investment roadmaps developed and integrated into the city-wide planning cycle (District Energy Master Plan)	0	n.a.	Up to 3 cities	3 Cities Master Plans are planned to be developed in 2022, to improve their technical, economic, commercial, and regulatory design. The Terms of Reference for the consultant that will develop the Master Plans are being designed while waiting for the pilots to move forward and the process to hire will be led by UNEP Cites Unite.	S
	Greenhouse Gas Emissions Mitigated (metric tons of CO <sub>2</sub> e) (Project Core Indicator 6)	0	n.a.	Direct emission savings (over 3 years): 40,000 tCO <sub>2</sub> e	0 tCO <sub>2</sub> e, as project pilots have not yet started.  Currently, 2 projects have the highest probability of obtaining financial support, which gives an estimation of a CO <sub>2</sub> e reduction of around 5,000 tons, year 16,317 tons in 3 years may be obtained from pilot projects in: <ol style="list-style-type: none"> <li>1. Recoleta / Independencia</li> <li>2. Talcahuano</li> </ol> In the line, there are another 2 projects with the highest probability of obtaining financial support, with the estimation to obtain CO <sub>2</sub> e reduction of around 5,439 tons/year.  In Semester 2 of 2022, the project team together with UNEP will undertake a review of the direct emission savings target, considering cost considerations and how the pilots can promote the scale-up of district energy throughout Chile following the project's conclusion.	S
	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment (Project Core Indicator 11)	0	n.a.	3,000 people, ~50% women	0 (in progress).  Estimation of direct beneficiaries based on the information obtained from the public accounts of the survey done in 2021 is of 129,532 people (about 50% women) will be beneficiaries only by considering the implementation of 2 projects with a high probability to pass through the financial support.	HS

<sup>1</sup> Use GEF Secretariat required six-point scale system: Highly Satisfactory (HS), Satisfactory (S), Marginally Satisfactory (MS), Marginally Unsatisfactory (MU), Unsatisfactory (U), and Highly Unsatisfactory (HU).

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Summary by the EA of attainment of the indicator & target as of 30 June 2022	Progress rating <sup>1</sup>
<b>Outcome 1, indicator 1a:</b>	National District Energy Office (NDEO) is established	0	n.a.	1	<p>1, Accomplished.</p> <p>The National District Energy Office (NDEO) was established in September 2020 and is fully functional. A team of 3 engineers was hired by the Executing Agency for the execution of the Work Plan during the duration of the GEF Project, all of them were incorporated into the Agency of Sustainability Energy, in the Heat and Cooling Development Line. Together with the Directors of the NDEO and the National Technical Advisor from UNEP, the work organization was prepared, activities were distributed, protocols were designed, and the team's work tools were established. All this is supported by employment contracts and a document that describes the operation of the NDEO. Also, it is supported by the designed procedures.</p>	S
<b>Outcome 1 indicator 1b:</b>	Number of municipalities that develop district energy projects	0	n.a.	Up to 5 cities	<p>Accomplished. The following municipalities have received directly supported to develop their district energy projects:</p> <ol style="list-style-type: none"> <li>1. Recoleta</li> <li>2. Independencia,</li> <li>3. Talcahuano,</li> <li>4. Renca</li> <li>5. Cochrane</li> </ol> <p>In addition, the municipalities of Coyhaique, Temuco, Chaitén, Osorno, Chillán, Puerto Williams, Talca, Curacautín, and Los Ángeles are being supported indirectly, through applications presented by private companies or other institutions.</p>	HS

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Summary by the EA of attainment of the indicator & target as of 30 June 2022	Progress rating <sup>1</sup>
<b>Outcome 2 indicator 2a:</b>	Number of revised financial schemes	0	n.a.	1	<p>0 (in progress and to be completed in the following years in accordance with the workplan).</p> <p>NDEO is reviewing the financing schemes of the current government programs related to stove exchange and retrofitting of buildings, as well as other financial schemes of different institutions like the Chilean Economic Development Agency (CORFO). All these schemes have been included in the report that the project is developing. The final document of the proposal of a National District Energy Financial Support Programme will include the analysis of these schemes, including existing and new financial schemes for district energy in Chile. We expect this proposal to be finished in August 2022.</p> <p>On the other hand, the 18 projects supported have different business models to implement, and the general conclusion of this analysis is that several projects required a subsidy to be implemented. Regarding the investment execution scheme, a public concession is required, since the supported projects have as a condition the use of national assets for public use, which must be concessioner by a public entity in public/private partnerships. These conclusions are relevant to generating a scalable financial scheme and will be considered for the proposal.</p>	HS
<b>Outcome 2 indicator 2b:</b>	Amount of finance capitalized for district energy and support pilot activities	0	n.a.	At least US\$ 10,000,000 capitalized and up to three pilot activities are supported	<p>In progress, with estimates that USD 12 million will be capitalized in future project years.</p> <p>Currently, it is estimated that the projects of Talchauano and Recoleta/Independencias are the most likely to receive financial support from the GEF Project. Between the two, an amount of private finance capitalized of 12 million dollars would be obtained:</p> <ul style="list-style-type: none"> <li>• Recoleta and Independencia presents a CAPEX of 7.3 million dollars as private investment.</li> <li>• Municipality of Talcahuano presents a CAPEX of 4.7 million dollars as private investment.</li> </ul>	HS

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Summary by the EA of attainment of the indicator & target as of 30 June 2022	Progress rating <sup>1</sup>
<b>Outcome 3 indicator 3a:</b>	Number of technical and planning regulations or standards developed and prepared for adoption at national level	0	n.a.	2	2, accomplished two technical and planning regulations are developed and prepared for adoption at the national level. <ol style="list-style-type: none"> <li>1) National District Energy Law: develop to regulate an enabling framework for the development of a district energy market in the country.</li> <li>2) Modification of the General Ordinance of Urban Planning and Construction: this would allow the location of thermal power plants on land currently classified as equipment in cities. Currently, this modification is under review of the Comptroller General of the Republic.</li> </ol>	S
<b>Outcome 3 indicator 3b:</b>	Number of cities with new regulations or policy actions on district energy prepared for adoption.	0	n.a.	2 cities	0 (in progress and to be completed in the following years in accordance with the work plan).  To date, 10 different cities have been reviewed and 5 more are being evaluated.  The NDEO reviewed the municipal regulations to incorporate district energy in the cities where a project was supported or is being supported. In this process, the team is working in reviewing the opportunities within the municipal regulations and a general proposal of modifications to the local instruments of territorial ordering.	HS

<p><b>Outcome 4 indicator 4a:</b></p>	<p>Number of additional requests to the NDEO</p>	<p>0</p>	<p>n.a.</p>	<p>5 requests</p>	<p>8 municipalities, as well as other requests from the private sector and academia. Accomplished.</p> <ol style="list-style-type: none"> <li>1) The municipality of Osorno, Talagante and Peñalolén after the first Workshop carried out by NDEO, requested support to identify and carry out district energy projects in the commune. A workgroup was organized with regional authorities, the municipality, and an interested company (Engie) to provide guidance to present a preliminary profile on which to work.</li> <li>2) The municipality of Independencia and Recoleta requested institutional support (ASE) to convoke potential key clients. The activity was organized with the participation of the mayor, municipal teams, ASE and its Director, and representatives of potential key clients.</li> <li>3) The municipalities of Recoleta and Talcahuano requested support to obtain scholarships to take the Diploma on District Energy dictated by the Universidad de la Frontera: 3 scholarships were awarded, including the Regional Ministerial Secretary of Environment of the Aysén Region.</li> <li>4) The Regional Ministerial Secretariat of Energy of the Maule Region requested support to identify promising district energy projects in the Region.</li> <li>5) The Regional Ministerial Secretariat of Environment of the Ñuble Region requested training in district energy since they are incorporating the goal of evaluating a district energy project within the framework of the Atmospheric Decontamination Plan of Chillán and Chillán Viejo. They also requested support to identify projects to be evaluated and that have the potential to be implemented later.</li> <li>6) The Universidad de La Frontera (UFRO) requested support from the NDEO to facilitate speakers in the second version of the Diploma in District Energy, which will be held during the second semester of 2022.</li> <li>7) Several other requests were received:             <ol style="list-style-type: none"> <li>a. Technology providers and ESCOs have sought support to explore the incipient district energy market in Chile (Anwo, Danfoss, Kpa Unicom, Filtro Vivo, Intek, Engie, Prolignis, Statkraft, Energy Tracking, BB Solutions, Pacific Hydro);</li> <li>b. Large companies seek to develop projects outside their core business (CMPC, Gasco, Galilea, Colbún, Codelco);</li> </ol> </li> </ol>	<p>HS</p>
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Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Summary by the EA of attainment of the indicator & target as of 30 June 2022	Progress rating <sup>1</sup>
					<ul style="list-style-type: none"> <li>c. Emerging companies seek guidance on how to move forward (Patagonia H2, WTE Araucanía);</li> <li>d. Research centers and foundations seek to support from their know-how (Fundación Energía Para Todos, Passivhaus);</li> <li>e. Commercial offices seek to open a market for foreign companies (Business Finland, Business Sweden);</li> <li>f. Study centers seek to position themselves from the academia (INACAP, UFRO, Heat Academy);</li> <li>g. Business associations seek market share (Chilean Chamber of Construction, Chilean Biomass Association).</li> </ul>	
<b>Outcome indicator 4b:</b> 4	Number of people trained in workshops disaggregated by gender	0	n.a.	50	<p>65 women and 172 men. Accomplished.</p> <p>During the first of a series of workshops that NDEO gave, 65 women and 172 men were trained in international success experience of district heating and cooling, as well as the support that NDEO offers to implement district energy projects in Chile:</p> <ul style="list-style-type: none"> <li>• WS1: District Energy as an alternative to decarbonization (<a href="https://www.youtube.com/watch?v=Xo_2S880gJA&amp;t=44s">https://www.youtube.com/watch?v=Xo_2S880gJA&amp;t=44s</a>)</li> <li>• WS2: Use of local heating and cooling resources in District Energy Systems (<a href="https://www.youtube.com/watch?v=4Eg8ED_LQ54&amp;t=10s">https://www.youtube.com/watch?v=4Eg8ED_LQ54&amp;t=10s</a>)</li> <li>• WS3: Best Practices for Engaging End Users in District Energy Systems (<a href="https://www.youtube.com/watch?v=selllg2MPLw&amp;t=33s">https://www.youtube.com/watch?v=selllg2MPLw&amp;t=33s</a>)</li> </ul> <p>Regarding the implementation of the gender plan the proportion on the workshops give excellent results since. The Chilean reality on energy topics use to attract more men than women, but the project obtain similar rates of participation of women in activities such as energy planning.</p> <p>Two other workshops will be held during 2022, in which training will be delivered in more specific aspects to take a district energy project from its conceptual phase to its implementation. The Universidad de La Frontera (UFRO) requested support from the NDEO to facilitate speakers in the second version of the Diploma in District Energy, which will be held during the second semester of 2022. There will be 6 scholarships to attend the Diploma, and the number of beneficiaries will be equally distributed between men and women.</p>	HS





3.2 Rating of progress implementation towards delivery of outputs

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<b>COMPONENT 1: Establishment of a National District Energy Office (NDEO)</b>					
<b>Output 1.1:</b> National District Energy Office (NDEO) established	23-sept-2020	100%	100%	Status: Achieved. The NDEO was established in September 2020, with a defined structure, roles and procedures, and a staff composed by 3 permanent engineers (included PM), 2 directors (Agency of Sustainability Energy and Ministry of Energy) and 1 national coordinator from UNEP. In April 2022, the junior engineer has left the team for another job opportunity. Until now, the NDEO has continued to function normally with 2 engineers, the 2 directors and the national coordinator from UNEP.	HS
<b>Output 1.2:</b> National geographical database for district energy projects created	23-dec-2020	100%	100%	Status: Achieved. A National geographic database for district energy projects was created, with 43 projects identified, specified their engineering progress, georeferenced each project location polygon, and estimated the probability or conditions to be supported by NDEO and eventually implemented. Deliverable: Excel tool with a national project database was developed. Document with the prioritization of projects from the crossing of the existing project database and existing Heat maps for Chile was developed.	HS

<sup>2</sup> Outputs and activities (or deliverables) as described in the project logframe (and workplan) or in any updated project revision.

<sup>3</sup> The completion dates should be as per latest workplan (latest project revision).

<sup>4</sup> As much as possible, describe in terms of immediate gains to target groups, e.g. access to project deliverables, participation in receiving services; gains in knowledge, etc.

<sup>5</sup> To be provided by the UNEP Task Manager

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<p><b>Output 1.3:</b> A methodological approach to support local governments and private developers is prepared and published in an internal procedure guidebook</p>	23-feb-2021	100%	100%	<p>Status: Achieved. A methodology was created to diagnose the progress of the engineering of the projects, detect needs for improvement in the technical, regulatory and business model design, and design a work plan with the aim of graduating the projects at least in the pre-feasibility stage. The Open Call was launched on December 24, 2020, the Terms and Conditions were published, and all the information was hosted on the Project website (<a href="https://www.agenciase.org/energia-distrital/">https://www.agenciase.org/energia-distrital/</a>).</p> <p>Deliverable: NDEO's internal procedures were created to systematize and standardize this support, which has been applied to date:</p> <ul style="list-style-type: none"> <li>- Energy demand estimation and economic-technical pre feasibility tool.</li> <li>- Three normative guidelines were developed.</li> </ul> <p>An excel tool for national and international funding mechanisms and financial instruments available for Chile to support the development of District Energy Projects is done.</p>	HS
<p><b>Output 1.4:</b> Up to 10 projects are reviewed and their financial feasibility is improved</p>	23-apr-2022	44%	95%	<p>In progress. The delay in this Output will be adjusted in the next project Revision. Regarding the goal, it was decided not to limit it to a maximum of 10 projects, but a minimum of 10, in a permanent application process during 2021. The reason for this decision was to maximize the probability of reaching the implementation phase with the maximum possible number of candidates and in the shortest possible time. Limiting the support to 10 projects had the risk of depending too much on the agility of the proponents to reach the implementation phase, while increasing the universe of candidates, the implementation phase begins with the first 3 projects in a position to be financed (or until resources are exhausted). Given that 9 projects have already graduated from this line of the Call and there are another 7 that will most likely graduate in July 2022, we consider that the activity has fulfilled its initial objective. Regarding the 2 Stakeholder workshop to exchange experiences and lesson learnt is partially planned, but there is not yet a concrete schedule. The activity has a planned execution date of the second half of September, 2022</p>	S
<p><b>COMPONENT 2: Demonstration of financial feasibility of district energy projects</b></p>					

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<p><b>Output 2.1:</b> District Energy financial incentives are reviewed to be included in a proposal for the National District Energy Financial Support Programme.</p>	<p>23-jun-2021</p>	<p>0%</p>	<p>50%</p>	<p>NDEO received a response from the Ministry of the Environment regarding the review of its Heater Replacement Program (activity 2.1.1), to analyse the inclusion of central heating systems that allow homes to connect to a district network, within its range of bankable possibilities. NDEO received the response from the Ministry of Housing and Urbanism regarding the review of its Building Thermal Conditioning Program and a proposal on how to adapt the instrument so that it can deliver a targeted benefit to future district energy projects (activity 2.1.2). NDEO reviewed other current public financing programs in Chile, particularly those related to the Production Development Corporation (CORFO).</p> <p>In general, this output has not advanced according to the planned schedules, due to the slow responses of the Ministries, presidential election, and government administration changes. Furthermore, the new government administration principles and guidelines will be included in the Programme proposal and recently in July 2022 the Ministry of Energy will have the main actions lines to develop in the current administration and the final proposal will be done in August 2022.</p> <p>Deliverables: Letter of the Ministry of Housing with the Building's Thermal Retrofit Programme analysis. Minute of the Ministry of Environment with the Woodstoves Change out Programme review. Excel data base with different Chilean financial mechanisms, proposal of the Programme.</p>	<p>MS</p>

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<p><b>Output 2.2:</b> Detailed project development undertaken to <b>bring up to 3 pilot</b> projects from pre-feasibility to tender</p>	23-aug-2022	0%	50%	<p>This activity has progressed with the complication of the availability of land to locate the thermal power plants of the projects according with the planning regulations. Where more progress has been achieved is in the project presented by the Municipalities of Recoleta and Independencia, since here there has been clear interest from some key actors to locate the thermal power plant. In the projects presented by the Universidad Austral de Chile and the Municipality of Talcahuano. In that sense we have been working to obtain progress in:</p> <ul style="list-style-type: none"> <li>• Meetings with the Institutions and with their decision makers such as the Rector of the University of Chile, Executive Director of the Center for renewable energies, Director of Horwitz Psychiatric Institute, and the mayor's offices of Recoleta and Independencia, and others</li> <li>• The UNEP visit in May 2021 was used to reinforce the commitments of the municipalities</li> <li>• The ToR for the bidding for the feasibility studies of the project are being finalized.</li> </ul> <p>The next step is to define the final location of the thermal power plant, out of the three options currently in study. Along with this, define the conditions of negotiation with the respective institution, to obtain the transfer of the land.</p>	MS
<p><b>Output 2.3:</b> Calls for tender for the construction and operation of the 3 pilot projects are launched and bidders selected</p>	23-nov-2022	0%	0%	<p>This activity has not started, because no progress has been made on Deliverable 2.2.4, for the reasons indicated above. To save time, work will be done in parallel on the preparation of the ToR for the construction and operation tender, while the basic engineering studies are being carried out. The objective is to be launching the bidding process for the construction and operation of the project presented by the Municipalities of Recoleta and Independencia within the term established for this Output. We expect the launch of the tender process for construction and operation could take place in the second semester of 2023.</p>	MU

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<p><b>Output 2.4:</b> District energy master plan and investment roadmap developed with up to 3 cities with pilot projects selected to receive support from the National District Energy Financial Support Programme</p>	23-feb-2023	0%	0%	<p>This activity will be starting at the beginning of the second semester 2022, in the case of the municipalities of Recoleta and Independencia since no project had yet been awarded (until now) to receive the support of Component 2. For the other two cities to be evaluated, it is still necessary to wait for them to be defined, depending on the progress made by the other projects that are candidates to receive support from Component 2.</p> <p>The hiring of the consultant that will develop the Master Plans has been carried out by UNEP, and the Terms of Reference are being designed while waiting for the projects to move forward.</p>	MU
<p><b>COMPONENT 3: Designing an enabling regulatory framework at national and local level</b></p>					
<p><b>Output 3.1:</b> Technical and planning regulations and standards on district energy are developed and prepared for adoption, considering national and international experiences and good practices</p>	23-jun-2022	20%	90%	<p>The draft is ready with the review of the regulatory framework and technical standards. The presentation of the draft to the new government authorities, for review and updating of the national strategies, is still pending. A modification to the General Ordinance of Urban Planning and Construction, which would allow the location of thermal power plants on land currently classified as equipment in cities, was presented to the Urban Development Division of the Ministry of Housing and Urban Planning, after which it must pass by review of the Comptroller General of the Republic. We expect that all documentation will be finished in October 23th, 2022.</p> <p>Deliverable: National regulatory framework for district energy drafted, it includes the national and international regulation and strategies for district energy projects is done. There are recommendations of international regulations that could apply to the case of Chile.</p>	S
<p><b>Output 3.2:</b> Guideline for municipalities on how to incorporate the technical and planning regulations and standards of output 3.1 into the local regulatory framework are developed</p>	23-sept-2022	20%	100%	<p>NDEO has made further progress in technical and planning regulations in order to improve the knowledge at the local level and a guideline for local authorities (municipalities) has been published in the district energy web page <a href="http://www.energiadistrital.cl">www.energiadistrital.cl</a></p> <p>Deliverable: Guideline published on website</p>	HS
<p><b>COMPONENT 4: Outreach, trainings and dissemination of results to scale-up the market</b></p>					

Outputs/Activities <sup>2</sup>	Expected completion date <sup>3</sup>	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification <sup>4</sup> , description of challenges faced and explanations for any delay	Progress rating <sup>5</sup>
<p><b>Output 4.1:</b> Methodologies and tools to build capacity among local stakeholder on project development, including a cost-benefit tool are developed and delivered through.</p>	<p>23-apr-2023</p>	<p>25%</p>	<p>80%</p>	<p>The first of the series of 3 workshops has already been developed and has been successfully convened. As a result of the event, important approaches were obtained, such as Business Sweden, Business Finland and some municipalities, which today are advancing profitably. This was also reflected in the project application rate to the Open Call for project support, which increased considerably in the weeks immediately following the event. Several seminar initiatives were handled, in cooperation with INACAP and Heat Academy, a new interested partner. The cost-benefit tool was developed, is operational and will be improved with the support of the Ministry of Social Development and Family.</p> <p>Deliverable:</p> <ul style="list-style-type: none"> <li>• An excel cost-benefit tool was developed.</li> <li>• Dissemination material was developed: studies, reports, videos, guidelines and material are available on the website <a href="http://www.energiadistrital.cl">www.energiadistrital.cl</a></li> <li>• 2 of 3 workshops are already held. The third one is scheduled for august 2022</li> <li>• Fact sheets with lessons learnt and main technical and economic characteristics of the three pilots developed and disseminated is being deliver.</li> <li>• Guide summarizing technical and policy regulations framework for the private sector are published on website</li> </ul>	<p>S</p>

<p><b>Output 4.2:</b> Outreach campaign and awareness raising material is designed and disseminated to the stakeholders</p>	<p>23-jun-2023</p>	<p>20%</p>	<p>40%</p>	<p>The website was developed at the beginning of the Project and has been continuously updated with explanatory material, videos, studies and information related to project support. Currently, it is under review, in order to better organize the information and documentation contained. UNEP is working on the website update and translation to English.</p> <p>The development of guidelines is achieved. An extension of 6 months for the elaboration of guidelines was required (expected completion date updated to this situation), which was unanimously approved by the Project Steering Committee, since the dissemination campaign of the Open Call for project support should have been prioritized.</p> <p>Deliverables:</p> <ul style="list-style-type: none"> <li>• Guidelines published on website (4.2.1):             <ul style="list-style-type: none"> <li>○ Guide for Local and Regional Governments: 5 Steps to Boost District Power Projects: <a href="https://drive.google.com/file/d/1T08XLOHAr371Cn8y5FsdHW4OPRduTUhK/view?usp=sharing">https://drive.google.com/file/d/1T08XLOHAr371Cn8y5FsdHW4OPRduTUhK/view?usp=sharing</a></li> <li>○ Technologies available for district energy and opportunities for the real estate sector: <a href="https://drive.google.com/file/d/1-kTpR-5UKpC0SU3l816W7oggu3eobREE/view?usp=sharing">https://drive.google.com/file/d/1-kTpR-5UKpC0SU3l816W7oggu3eobREE/view?usp=sharing</a></li> </ul> </li> <li>• 3 online events will be held in August 4<sup>th</sup> and 11<sup>th</sup> both focused in different stakeholders (4.2.2).</li> <li>• 2 of 6 webinars developed (4.2.3), abording themes like heat and cooling resources and best practices:             <ul style="list-style-type: none"> <li>○ Wb1: Use of local heating and cooling resources in District Energy Systems (<a href="https://www.youtube.com/watch?v=4Eg8ED_LQ54&amp;t=10s">https://www.youtube.com/watch?v=4Eg8ED_LQ54&amp;t=10s</a>)</li> <li>○ Wb2: Best Practices for Engaging End Users in District Energy Systems (<a href="https://www.youtube.com/watch?v=seIlIq2MPLw&amp;t=33s">https://www.youtube.com/watch?v=seIlIq2MPLw&amp;t=33s</a>)</li> </ul> </li> <li>• The website was developed (4.2.4) at the beginning of the Project and has been continuously updated with explanatory material, videos, studies and information related to project support. : <a href="https://www.agenciase.org/energia-distrital/">https://www.agenciase.org/energia-distrital/</a></li> <li>• Benefits of connecting to a District Energy network: <a href="https://drive.google.com/file/d/1q5FOGgELEauxY8ENcYcEa4JucyZANviT/view?usp=sharing">https://drive.google.com/file/d/1q5FOGgELEauxY8ENcYcEa4JucyZANviT/view?usp=sharing</a></li> </ul>	<p>S</p>
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3.3. Risk Rating

Table A. Risk-log

Risk	Risk affecting:	Variation respect to last rating					Justification
	Outcome / outputs	CEO ED	PIR 1	PIR 2 (this PIR)	PIR 3	Δ	
<u>Climate risk</u> Climate risks and hazards will affect project's objectives or outputs over the period 2020 to 2050.	Objectives Outcomes 2.1, 2.2	L	L	L		=	Climate situation has no changed and is not expected to change during the execution time. Therefore, the risk category is maintained.
<u>Political prioritization</u> Reduced prioritization by local and/or national authorities results in project activities and/or recommendations not being implemented. For example:  1)National Government ministries remove their support for the project, including due to political or social change.  2)Local Government's cities remove support for the project including due to regional or municipal elections in 2020 (or beyond).  3)Lack of interest from local authorities to launch requests for proposals to build the projects  4)City does not want to adopt city-wide plan of policies and investments	All outcomes & outputs: particularly Outcome 1.2 Outputs 1.4, 2.2, 2.3, 2.4	M	M	L		↓	1)The risk of losing political support due to the change in government administration was ruled out since the current government has not only provided support for the objectives of the GEF Project but has also established the goal of building at least one energy project in Chile during this administration.
		M	M	L		↓	2)So far, the support from local governments has remained intact, even after the changes of administration due to the 2020 municipal elections. This support has grown in those municipalities that have been supported by the NDEO. In general, support is observed to grow in proportion to the progress of the different supported projects.
		M	L	L		=	3)In general, the municipalities in the country have shown considerable interest in developing local energy strategies, within which district energy appears with great potential. After the Open Call closed, 6 municipalities applied for the process, of which 5 were admitted. In addition, 3 other municipalities approached the NDEO, with the interest of exploring the possibilities of developing district energy. In other cities, applications have been submitted by private companies or institutions, although the municipality has been involved at some level in most cases.
		M	M	L		↓	4)The municipalities that are receiving support to move on to the implementation of projects maintain their interest intact and those that could not continue as well. There is no significant risk of not having the motivation on the part of the municipalities that are being supported. Just as a precaution, it is decided to maintain the risk rating.
<u>Technical capacities in the PMU</u> For establishing the NDEO no suitable qualified national professionals can be hired.	Outcome 1.1 Output 1.1	M	L	L		=	NDEO has successfully established 3 engineers with extensive prior experience in district energy and energy efficiency who were hired to form the permanent staff of the NDEO. The risk of escaping to the private sector was reflected since the junior engineer was captured by a private company in April 2022. Therefore, it is decided to keep the risk in the Low category because the team and the UNEP National Advisor have managed to keep delivering.
<u>Long-term financial sustainability</u> NDEO is not able to identify a way to continue sustainable operations after project completion	Outcome 1.1 Output 1.1	M	M	M		=	The Ministry of Energy has been involved in standing different strategic continuity to guarantee the continuity of the NDEO beyond the duration time of the GEF Project. The longer-term continuity mechanism must be resolved during the next semester.



<u>Financial closure of pilots</u> A financially sound project does not emerge from the project. For example, this risk materializes if: 1) Investors are not interested in applying for tenders 2) Projects fall through and are not investable	Outcome 2.2 Outputs 2.1, 2.2, 2.3	M	M	M	=	1) Uncertainty about market expectations remains high and the international situation is not better. Movements are seen in the initiatives of large companies, some withdraw, and others take interest. In addition, 2 recent bidding processes for other projects, outside the GEF call and support, have failed without attracting investors or developers. Therefore, it is decided to maintain this latent.
		M	M	L	↓	2) The projects supported by the NDEO present certain risks inherent to their execution conditions. As progress has been made towards the implementation of the projects under support, the risks have evolved from a general uncertainty of success to more specific challenges. In general, there is no warning of a situation of greater risk, although delays in the execution of work plans are anticipated.
<u>Contributions from stakeholders (including co-finance)</u> Co-finance partners remove support for the project	All outcomes & outputs	L	L	L	=	Relationships with the Project partners have been developed positively. In addition, other companies, and institutions (developers, commercial offices from other countries, suppliers, trade associations, academia, etc.) have shown considerable interest in supporting the Project and participating in its various instances.
<u>Administrative and procurement risk</u> The pilot projects cannot be implemented, and commissioning as planned in accordance with the expected performance	Outcome 2.2	M	M	L	=	Although the risks and mitigation strategies are addressed in the pre-feasibility and feasibility phases, the possibility of the appearance of contingencies or imponderables may arise despite having foreseen their mitigation. These risks are not identified a priori, but the category is maintained due to the high impact they may have if they occur.
<u>Stakeholder engagement</u> Lack of participation or interest from project stakeholders attempts against the adoption of district energy. This risk materializes through:  1) Inadequate support/will from local authorities and other stakeholders to commit to policies and regulations. 2) End users are not interested in connecting to a district energy network. 3) Cities are not attracted by the outreach activities 4) New risk: Negotiations with landowners will take longer than expected.	Outcomes 3 and Outcome 4.2 Outputs 2.2, 2.3, 4.1, 4.2	M	M	L	↓	1)The experience with municipalities has been good in terms of willingness to embrace new energy planning policies. Regarding land use, the municipalities with which the NDEO has worked have been in favor of updating certain territorial planning regulations.
		M	M	M	=	2)The experience in Chile with district energy projects, although scarce, shows that the reversion rate of connected residential customers is very low. In known surveys, about 80% of potential residential end users express interest in connecting to a district energy network. Regarding institutional clients, in general, they are more sensitive to the service tariff and security of supply, for which the interest is more manageable. It is decided to maintain the risk rating since an active project by project management is required to mitigate this risk.
		M	M	L	↓	3)The participation of the municipalities in the dissemination activities has been positive. The expressed interest of the central government in promoting district energy is expected to stimulate even more the interest of local governments as well. So, it is decided to reduce the risk rating to Low.
		n.a	n.a	M		4) This risk is included in this report, since this barrier was identified as a serious impediment to the implementation of some projects since land use restrictions make it necessary to locate the thermal power plant on private land. The risk rating is set to Medium since a low probability of success is expected on the required schedule.
<u>Pilot implement</u> Limited availability of land with suitable land use to locate thermal power plants action.		n.a	n.a	M		4)This risk is included in this PIR, since some projects have not been able to advance towards implementation, due to the fact that they do not have allowed land to locate the thermal power plant in the area of influence. The risk rating is set to Medium since The Ministry of Housing and Urbanism is processing a modification to the General Ordinance of Urbanism and Construction, which is under review by the Comptroller General of the

							Republic and, if successful, would allow the thermal power plant to be located on land currently typified as equipment, which could activate some projects supported by the NDEO.
<b>Consolidated project risk</b>		<i>n.a</i>	<i>M</i>	<i>M</i>		=	<i>The overall level of risk is <b>Moderate</b> has been maintained since the last PIR. The main contingency observed is related to the limited availability of land with suitable land use to locate thermal power plants. Projects with good potential have been delayed or dropped because of this reason. Negotiations with landowners have taken longer than expected. The global and national economic situation maintains a climate of uncertainty that does not favour investment. The interest of public actors remains intact, private actors are more cautious. The regulatory changes necessary to accelerate investment have been slow, the product of political processes and the historical inertia of the institutions. The 2021 presidential elections did not constitute an increase in risk since the current government administration has been committed to promoting district energy since the electoral campaign and has maintained that commitment in its public policy planning.</i>

**Table B.** Outstanding medium & high risks

Risk	Actions decided during the previous reporting instance (PIR <sub>t-1</sub> , MTR, etc.)	Actions effectively undertaken this reporting period	Additional mitigation measures for the next periods		
			What	When	By whom
<p><u>Long-term financial sustainability</u></p> <p>NDEO is not able to identify a way to continue sustainable operations after project completion</p>	<p>Identify a continuity mechanism, which will be worked on during the rest of the duration of the Project. The support provided by UNEP will be key.</p>	<p>The NDEO requested support from the District Energy in Cities Initiative to evaluate international funds that can finance the NDEO after GEF-7. This is in progress, so there is no report to share.</p>	<p>Develop a strategic plan to guarantee the NDEO sustainable operations after the GEF project finished, based on the identification and consideration of different alternatives (including public, private and innovative financing sources).</p>	<p>June 2023</p>	<p>Project Manager, in consultation with the Ministry of Energy, NDEO, UNEP District Energy Initiative</p>
<p><u>Financial closure of pilots</u></p> <p>A financially sound district energy investment proposal does not emerge from the project activities. For example, this risk materializes if:</p> <p>1) Investors are not interested in applying for tenders</p>	<p>In general, expressions of interest in investing have been received. The risk that may appear during this period is related to a certain uncertainty related to the change of government and the ongoing constitutional process, added to the pandemic, which generates an unfavorable climate for investment. However, the Chilean industry appears healthy and good political support from the incoming government is visible. The process of preparing the ToR for the building and operation concession will be key to clear up</p>	<ul style="list-style-type: none"> <li>- Dissemination of the projects at an international level, through which potential investors have been motivated in the Mission Efficiency Event in Copenhagen, Denmark (June 2022).</li> <li>- Communications with private companies to promote interest in investment. such as Engie, Danfoss, Aguas Nuevas, Tractebel, KPA Unicon, Veolia, Statkraft, Alfalaval, and international institutions such as Business Sweden, Danish Board on District Heating, Danish Energy Agency, Low Carbon Business Action, and Business Finland.</li> </ul>	<ol style="list-style-type: none"> <li>1) Generate a questionnaire to identify key challenges in investing so the investors have enough information to invest.</li> <li>2) Organize an investor workshop/event to bring together investors and proponents, Chilean engineering companies and developers, and cooperation of commercial offices.</li> <li>3) Analyse similar bidding processes to guarantee that the project pilots do not fail to attracting investors or</li> </ol>	<ol style="list-style-type: none"> <li>1) September of 2022.</li> <li>2) November of 2022.</li> <li>3) October 2022.</li> </ol>	<p>Ministry of Energy, NDEO, UNEP.</p>

<p>2) Proposals are not investable.</p>	<p>uncertainties. A consultation with the market is not ruled out if necessary. Support is also being requested from UNEP, based on the international experience gained. If necessary, support will also be requested from UNEP to publicize the bidding process internationally.</p>	<ul style="list-style-type: none"> <li>- It has been possible to capture the interest of important potential clients through meetings with directors of the Ministry and the Agency. In all cases, the commitment of the municipalities has been sought, so that they facilitate the process, act as a link between the parties and explicitly commit to tendering the projects.</li> <li>- The ToR for the feasibility studies to be contracted has been developed by the NDEO, to obtain a conclusive study for the developers.</li> <li>- Technical cooperation was requested from the UNEP-DTU for the review of the ToR of the feasibility studies, to obtain the necessary inputs to prepare solid ToR in the construction phase.</li> <li>- The request for help was extended to the HNDU in the UK.</li> </ul>	<p>developers, and share this analysis with the project pilot developers, including recommendations on how to achieve successful bidding processes.</p>		
<p><u>Stakeholder engagement</u> Lack of participation or interest from project stakeholders attempts against the adoption of district energy. This risk materializes through:</p> <p>1) End users are not interested in connecting to a district energy network.</p> <p>2) Negotiations with landowners take longer than expected.</p>	<p>Maintain communication channels with the municipalities, through events stipulated in Component 4.</p>	<ul style="list-style-type: none"> <li>- The 3 cities to be involved have not yet been defined, because no pilot has yet been put out to tender, although considerable progress has been made with Recoleta/Independencia, Talcahuano and Talca.</li> </ul> <p>Regarding land negotiation:</p> <ul style="list-style-type: none"> <li>- A working group was established with the SOFOFA business association, the Municipality of Talcahuano and the Regional Ministerial Secretariat for the Environment of the Biobío Region, in which a methodology for offsetting emissions through district energy projects was developed and validated.</li> <li>- The Regional Ministerial Secretary of Energy of the Biobío Region joined the latter working group and a meeting was established to present the project before the Sustainability, Safety and Environment Management of the Huachipato steel company.</li> <li>- A similar meeting is being coordinated with the cement company CBB, with the support of the</li> </ul>	<ol style="list-style-type: none"> <li>1) Hold meetings with the landowners to provide them with clear information about the benefits that this new technology will bring them, including the long-term plan in terms of reducing costs and maximizing environmental benefits.</li> <li>2) Launch all the informative material generated by the project on the website.</li> <li>3) Disseminate the Guidelines for end users in massive activities and through the promoters of evaluated projects.</li> <li>4) Promote the role of ambassadors to those current users of district energy pilots, so that they can share experiences.</li> <li>5) Hold a consultation meeting with the end users and involve them from the planning stages.</li> </ol>	<p>1-Octubre 2022.</p> <p>2-Diciembre 2022.</p> <p>3-Agosto 2022.</p> <p>4- December 2022.</p> <p>5-September 2022.</p> <p>6-September 2022.</p> <p>7-September 2022.</p> <p>8-September 2022.</p> <p>9-Monthly meetings.</p> <p>10-October 2022.</p>	<p>NDEO, UNEP, Ministry of Energy, SOFOFA</p>

		<p>Municipality of Talcahuano. In addition, two other industrial sites are being explored where the plant could eventually be located, although with less expectations than the previous ones.</p> <ul style="list-style-type: none"> <li>- This risk does not hit the Recoleta/Independencia project in the same way since the negotiations there have been more successful. A working group was organized with both Municipalities and the Agency of Sustainability Energy to negotiate the availability of land with the University of Chile and with the Horwitz Psychiatric Institute. In addition, there is an option here to use public land, so a failure in the negotiations will not prevent the execution of the project.</li> <li>- Regarding the project presented by the Universidad Austral de Chile (UACH), a working group was established with the Rector's Office and the Agency of Sustainability Energy, although no results have been obtained to receive a response from the UACH Board of Directors.</li> </ul>	<ul style="list-style-type: none"> <li>6) Develop a cooperative model of ownership of district energy systems, to introduce a commitment of end users.</li> <li>7) Continue the negotiating table with the Huachipato company, in order to present the project to the Board of Directors.</li> <li>8) Develop the negotiating table with CBB.</li> <li>9) Continue the negotiating table with the University of Chile and the Horwitz Psychiatric Institute.</li> <li>10) Try to reactivate the negotiating table with the UACH.</li> </ul>		
<p><b>Pilot implementation</b> limited availability of land with suitable land use to locate thermal power plants action.</p>	<p>n.a</p>	<ul style="list-style-type: none"> <li>- The use of suitable land was analyzed according to the territorial planning instruments, in all the projects supported by the NDEO.</li> <li>- Strategies for land use incompatibility were explored, although an explanatory Circular issued by the Urban Development Division of the Ministry of Housing and Urbanism regarding land and subsoil use of the DES reduced the feasible options to those explicitly indicated in the territorial planning instruments, not allowing reinterpretations other than what is indicated in the Circular.</li> <li>- In the case of the project presented by the Municipality of Independencia, no suitable land was found for the location of the thermal power plant in influence, but a joint project was established with the Municipality of</li> </ul>	<ul style="list-style-type: none"> <li>1) Undertake a deep regulatory analysis regarding land use and sectoral permits, thus reducing regulatory uncertainty for developers.</li> <li>2) Prepare a contingency plan to analyze the different strategies for the implementation of the pilot.</li> <li>3) Review the projects supported by the NDEO and that could be activated in the scenario in which the modification to the General Urban Planning and Construction Ordinance is successful.</li> <li>4) Motivate the municipalities corresponding to the previous point to present the projects to the Execution Line if the necessary conditions are met.</li> <li>5) Promote the incorporation of energy infrastructure land among those municipalities that are in the</li> </ul>	<ul style="list-style-type: none"> <li>1) November 2022.</li> <li>2) August 2022. 2022-2023</li> <li>3) Octubre 2022.</li> <li>4) September 2022.</li> <li>5) August 2022.</li> <li>6) September 2022</li> </ul>	<p>NDEO, UNEP, Ministry of Energy</p> <p>6) Ministry of Energy</p>

		<p>Recoleta, which does have energy infrastructure land.</p> <ul style="list-style-type: none"> <li>- Work was carried out with the Ministry of Housing and Urbanism to present a modification to the General Ordinance of Urbanism and Construction, which would allow the thermal power plants of the DES to be assimilated to equipment land. The result of the review by the Comptroller General of the Republic is expected to be available in Q3 or Q4/2022.</li> </ul>	<p>process of developing a Local Energy Strategy or reviewing their Communal Regulatory Plan, thinking more about the medium and long term than in the time of the GEF Project, since these processes are quite long.</p> <p>6) Engage politically to encourage municipalities to accelerate approval processes for use of land for the district energy pilots</p>		
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**High Risk (H):** There is a probability of greater than 75% that **assumptions** may fail to hold or materialize, and/or the project may face high risks.  
**Significant Risk (S):** There is a probability of between 51% and 75% that **assumptions** may fail to hold and/or the project may face substantial risks.  
**Medium Risk (M):** There is a probability of between 26% and 50% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.  
**Low Risk (L):** There is a probability of up to 25% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.

**Project Minor Amendments**

Minor amendments are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5% as described in Annex 9 of the Project and Program Cycle Policy Guidelines.

Please tick each category for which a change occurred in the fiscal year of reporting and provide a description of the change that occurred in the textbox. You may attach supporting document as appropriate.

- Results framework
- Components and cost
- Institutional and implementation arrangements
- Financial management
- Implementation schedule
- Executing Entity
- Executing Entity Category
- Minor project objective change
- Safeguards
- Risk analysis
- Increase of GEF project financing up to 5%
- Co-financing
- Location of project activity
- Other

<b>Minor amendments</b>	<p>The main reason for the variation in the Project Revision comes from the update of the Staff &amp; Personnel class. These expenses were updated according to actual contracts agreed, corresponding to fixed monthly amounts in Chilean pesos during the period Sep / 2020 - Jun / 2023 (34 months). Consequently, the amounts established in the budget are subject to exchange rate fluctuation, for which the following assumptions were made: 1) the exchange rate for 2020 was taken at 762.85 CLP / USD (sale made for the first 24,000 USD) and 2) the exchange rate for the years 2021-2022-2023 was taken at 780 CLP / USD.</p> <ul style="list-style-type: none"> <li>• In terms of components, minor variations (&lt;3%) resulted from the revision of salaries described above, with Component 3 and 4 having an increase and Component 1, M&amp;E and PMC having slight reductions.</li> <li>• Activities &amp; outputs are not affected by this revision in quantity or quality.</li> </ul>
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**GEO Location Information:**

Location Name Required field	Latitude Required field	Longitude Required field	Geo Name ID Required field <u>if</u> the location is not an exact site	Location Description Optional text field	Activity Description Optional text field
Santiago	-33.45694	-70.64827	3871336		

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate. \*

Please see in the CEO the Section 1b. Project Map and Geo-Coordinates and Table 3: Supported cities in Chile