

UNEP GEF PIR Fiscal Year 2023
Reporting from 1 July 2022 to 30 June 2023

1. PROJECT IDENTIFICATION

1.1. Project details

Identification Table	GEF ID.: 10087	Umoja WBS: SB-015156
	SMA IPMR ID: 43331	Grant ID: S1-32GFL-000616
	Project Short Title: Chile DES	
Project Title	Accelerating investment in efficient and renewable district energy systems in Chile	
Duration months	Planned	49
	Age	36 months
Project Type	Full Size Project	
Parent Programme if child project	N/A	
Project Scope	National	
Region	Latin America and the Caribbean	
Countries	Chile	
GEF Focal Area(s)	Climate Change	
GEF financing amount	USD 2,141,781	
Co-financing amount	USD 16,355,000	
Date of CEO Endorsement/Approval	March 27, 2020	
UNEP Project Approval Date (on Decision Sheet)	May 22, 2020	
Start of Implementation (PCA entering into force)	May 22, 2020	
Date of Inception Workshop, if available	September 9, 2020	
Date of First Disbursement	August 14, 2020	
Total disbursement as of 30 June 2023	\$ 596469,75	
Total expenditure as of 30 June 2023	\$ 360685,75	
Midterm undertaken?	No	
Actual Mid-Term Date, if taken	N/A	
Expected Mid-Term Date, if not taken	July 2023	
Completion Date	Planned – original PCA	31/07/2024
	Revised – Current PCA	N/A
Expected Terminal Evaluation Date	31/07/2024	
Expected Financial Closure Date	31/07/2025	

1.2. Project description

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-terms 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:

Component 1: Establishment of a National District Energy Office (NDEO).

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.

Component 2: 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.

Component 3: 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.

Component 4: 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).

1.3. Project Contacts

Division(s) Implementing the project	Industry and Economy Division
Name of co-implementing Agency	N/A
Executing Agency(ies)	Agency of Sustainability Energy (ASE)
	UNEP Cities Unit
Names of Other Project Partners	N/A
UNEP Portfolio Manager(s)	Geordie Colville, Ruth Coutt
UNEP Task Manager(s)	Asher Lessels
UNEP Budget/Finance Officer	Fatma Twahir
UNEP Support/Assistants	Paula Cobas (programmatic) and Solange Rodriguez (finance)

EA Manager/Representative	Rosa Riquelme
EA Project Manager	Pilar Lapuente
EA Finance Manager	Clement Demons
EA Communications Lead, if relevant	N/A

2. OVERVIEW OF PROJECT STATUS

2.1 UNEP PoW and UN

UNEP Current Subprogramme(s)	Climate action
PoW Indicator(s)	<p>Outcome 1B: Countries and stakeholders have increased capacity, finance, and access to technologies to deliver on the adaptation and mitigation goals of the Paris Agreement.</p> <p>Indicator (ii): 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.</p>
UNEP previous Subprogramme(s)	NA
UNSDCF / UNDAF linkages	<p><u>Chile UNSDCF 2019 - 2022</u> <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. <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> <p><u>Chile UNSDCF 2023- 2026</u> Strategic priority 3: Sustainable development Model, inclusive and resilient, to face the climate crisis, biodiversity lost and pollution. - 3.2 Sustainable use of natural resources, restauration, and conservation of ecosystems and biodiversity - 3.3 Adaptation and Mitigation of Climate Change, resilience, and emergency management</p>
Link to relevant SDG Goal(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. <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>SDG 13.2:</u> Integrate climate change measures into national policies, strategies, and planning.</p>
Link to relevant SDG Target(s)	<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>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>

2.2. GEF Core Indicators:

Indicators	Targets – Expected Value			Materialized to date
	Mid-term	End-of-project	Total target	
6. Greenhouse Gas Emissions Mitigated (metric tons of CO2e) Over 20 years	0	40,000 tCO2e Direct Emission Savings	780,000 tCO2e Direct Emission Savings (Over 20 years)	0
11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	0	3,000 (approximately 50% of which will be women)	3,000 (Approximately 50% of which will be women)	0

2.3. Implementation Status and Risk

	FY 2021	FY 2022	FY 2023	FY 20	FY 20
PIR #	1 st	2 nd	3 rd	4 th
Rating towards outcomes (DO) (section 3.1)	S	HS	HS		
Rating towards outputs (IP) (section 3.2)	S	S	S		
Risk rating (section 4.2)	L	M	L		

Summary of progress:

Currently, 3 projects are in the phase of Basic Engineering for piloting: Recoleta+Independencia (R+I), Talca, and Coyhaique.

- The R+I project has public engagement both from public tender and public buildings connection. Land negotiation is still undergoing.
- The Talca Project has managed to include a greenfield urban development called Habitational Urban Plan (HUP) of the Ministry of Housing as part of the pilot project. A collaboration and fund transfer agreement between the Sustainable Energy Agency and the Maule Service of Housing is being elaborated, while land negotiations have begun.
- The Coyhaique project has leveraged a regional government subsidy and it's currently in the pre-investment phase with a strong citizen participation process developed.

During this period, the Ministry of Energy advanced in answering the comments and questions from the Ministry of Housing to the proposed modification to the General Ordinance of Urbanism and Construction, which would allow thermal power plants to be located on land classified as facilities. This proposal would significantly expand the possibilities of building district energy projects in cities and is currently under review by the Comptroller General of the Republic. In addition, the Ministry of Energy began the development of a methodology for district energy project social evaluation, together with the Ministry of Social Development. This will support projects to leverage subsidies from the National Investment System. Additional actions are being developed to analyze different business schemes under a study on Cooperative Models, the join to the Net Zero World Initiative of the USA Government, and a Technical Cooperation with the Danish Energy Agency, all of them under the Ministry of Energy's leadership.

The National District Energy Office is advising the three regional district heating roundtables that have been established during this reporting period. One in the Maule region (capital city, Talca), one in the Aysén region (capital city, Coyhaique), and one in the Araucanía region (capital city, Temuco). Each roundtable aims to overcome the local district energy barriers and develop pilot projects.

In terms of awareness-raising, capacity-building activities have been developed both from the NDEO to other stakeholders, as well as to the NDEO.

- 8 capacity building activities have been held during this period, including the launch of the 3 guidelines (on Local Planning, Benefits of Connecting a District Energy Network and Opportunities for the Real State sector); four tailored trainings to the District Energy Roundtables (focused on Regulation, Technologies, Project Development, and Case Studies); and one stakeholder's workshop with the 16 projects to exchange experiences and lesson learned of Line 1.
- The United Nations Environment Programme, under the framework of the Cool Coalition and the global District Energy in Cities Initiative, organized a week-long study tour and workshop series on district cooling and passive cooling in Singapore from the 7th to the 12th of May 2023. Two representatives from the NDEO and the Director of the Recoleta +Independencia pilot project, together with an international delegation of approximately 50 stakeholders from countries around the world, participated in dedicated workshops on national and local policy development, technology, business models, and financing of district energy and passive cooling projects.

Due to the previous arrears and the recent cities' selection, the energy master plans, investment roadmaps, and capital funding have been delayed. Therefore, funding for projects' subsidies will be transferred to the local governments that will tender the concession during 2024, as Project Revision 2. With these 3 projects, a private capital of 12 million dollars will be raised.

Rating towards outcomes:

The rating is HS because of significant progress achieved in project objectives and outcomes (in particular 4 of the 8 outcomes are rated HS),

Rating towards outputs:

The rating is S because although C1, C3 and C4 are rated as HS, the main difficulties are in C2 regarding the delays in the tender of the pilot projects (MS).

<p>Overall risk rating: The overall rating is L, but it is important to keep in mind that there are two risks that could delay project implementation: land negotiations take longer than expected, and/or public institutions take too long to procure. Those two are rated M.</p> <p>To address risks identified in the previous PIR, during this period a project extension to July 2024 has been approved, to ensure enough time for developing the conditions to implement the pilot projects. In addition to the project extension, some budget lines were redistributed to lower the previous PIR risks and to embrace identified opportunities. The main changes in activities and expected deliverables are:</p> <ul style="list-style-type: none"> • Improving the proposal of a National District Energy Financial Support Programme by analyzing additional local, regional, national, and international instruments and mechanisms that may be applicable to the district energy development in Chile. This activity has been contracted by June 2023, and will take place during the second semester of 2023. • Strengthen the outreach campaign by adding a social media and Marketing Campaign to raise awareness about district energy benefits, technologies, lessons learned, new regulations, and market opportunities. This service began in April 2023 and will last until March 2024. • Incorporating a Legal and Commercial accompaniment tailored to each of the pilot projects to support the procurement processes and build the concession conditions. These two services will be contracted to external advisors during the second semester of 2023.

2.4. Co-financing

<p>Planned Co-finance Total: (USD 16,355,000)</p> <p>Actual to date: (US \$ 1,214,541)</p>	<p>The project mobilized to date US\$1,355,000 in-kind co-finance committed. Regarding the US\$15,000,000 of co-finance committed as a grant, this amount will be exceeded with the construction of a greenfield social residential development - called Habitational Urban Plan (HUP) of the Ministry of Housing - that will be connected to the district energy network of Talca project, This will be reported in the next PIR.</p>
<p>Progress</p>	<p>The co-finance progress is observed according to what was planned due to the use of man-hours of the co-finance organizations that have contributed to all activities of the programme. Grant contribution will be expected to execute in the last quarter of the programme considering the delays in the construction of the pilot projects.</p> <p>Considering that 90% of the in-kind co-finance has already been executed and that all institutions are committed to continuing supporting the programme through the 13 months of extension, it is expected that co-finance will exceed the initial amount by at least USD 300.000.</p>

2.5. Stakeholder engagement

<p>Date of project steering committee meeting</p>	<p>November 2, 2020 January 1, 2021 January 10, 2023 January 22, 2023</p> <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>Stakeholder engagement</p>	<p>Regarding the pilot projects, Talca project has managed to include a greenfield residential development, called Habitational Urban Plan (HUP), of the Ministry of Housing as part of the pilot project. The Ministry and Regional Service of Housing in Maule Region, together with the NDEO, are working on the technical design for the multifamily building's connection to the district heating network, and the capital support will be allocated to co-finance the dwellings' internal distribution</p>

	<p>system. A district energy municipalities association has been signed between Recoleta and Independencia to promote the joint district energy pilot Project and a collaboration and fund transfer agreement between the Sustainable Energy Agency and the municipality of Recoleta is being elaborated. The Coyhaique project developed a social participatory process during the basic engineering, and some letters of interest or connection have been received. The Municipalities Association of R+I and the regional roundtables are supporting the stakeholders' engagement and the search for the terrains and transfer options.</p> <p>At a regional level, the support of the Ministries of Energy, Environment, and Housing has grown, being part of the Directives of the three regional district heating roundtables that have been established to accelerate district energy deployment. Letters from different actors of the regional roundtables were sent to the Ministry of Housing, to adapt the requirement for the district energy use of soil in the Urban Development General Ordinance. Likewise, at a national and international level, the NDEO has received support from Partners like INACAP and the Danish Energy Agency, but also from external institutions like Business Finland, Business Sweden, the Swiss International Cooperation, Net Zero World from the US Government, the Chilean Chamber of Construction, the Chilean Biomass Association, and the Chilean association of ESCOs (ANESCO). At the moment, more than 200 meetings have been held to disseminate the Programme among different audiences.</p>
--	--

2.6. Gender

Does the project have a gender action plan?	Yes
Gender mainstreaming	<p>Female participation has been prolific at the level of leadership and decision-making roles, both in the Project Stakeholders Group and in external stakeholders (municipalities and other institutions). Two women are part of the National District Energy Office (40%), including the Project Manager. A 33% of the projects declared admissible (the projects that we worked with in Line 1) have a woman as the focal point. Regarding public events, 51% of the speakers of all these events were women, which represents an acceptable figure when compared with what can be observed in other similar instances or in group participation in energy policy work in Chile. 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. The Maule's regional table of the Talca district heating is led by a woman and has several women members. Female attendees' participation to awareness-raising activities has been around 27%, which is a low value of women's representation, therefore, in the next public events, female participation will be specially promoted. Efforts have been made to quantify women's 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. The Universidad de La Frontera (UFRO) requested support from the NDEO and Ministry of Energy to facilitate speakers in the second version of the Diploma in District Energy. One woman and one man will speak, in exchange, there will be 6 scholarships to attend the Diploma and the number of beneficiaries will be equally distributed between men and women. In addition, in the guides published by the NDEO - specifically in the beneficiary guide - an attempt was made to have the same number of men and women interviewed, and regarding the documents, procedures, methodologies, guidelines, open calls, and terms of reference, inclusive language has been used.</p> <p>In terms of project direct beneficiaries, the Talca district energy network is going to connect 254 dwellings of a greenfield development called Habitational Urban</p>

	Plan (HUP) (project in charge of the Ministry of Housing), targeted to medium-class and vulnerable people. Women are the most affected by the polluting individual heating system in households, therefore this project will be able to benefit women and girls.
--	--

2.7. Environmental and social safeguards management

Moderate/High risk projects (in terms of Environmental and social safeguards)	Was the project classified as moderate/high risk CEO Endorsement/Approval Stage No
New social and/or environmental risks	Have any new social and/or environmental risks been identified during the reporting period? No
Complaints and grievances related to social and/or environmental impacts (to be filled in by TM and EA)	Has the project received complaints related to social and/or environmental impacts (actual or potential) during the reporting period? No
Environmental and social safeguards management	<p>The execution of the project has been carried out in accordance with local Health and Environmental regulations. The pilot and investment projects were designed considering emission criteria and incorporating emissions abatement systems and noise reduction in the district energy plants. 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. 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>The development of DES under Chilean legislation allows end users to be included in the implementation of projects, through citizen participation. The Coyhaique project carried out an early citizen participation with strong involvement of the end users that are organized through neighborhood councils and have actively participated in the whole process of socialization of the project and the key aspect of the design, social benefits, and urban compatibility.</p>

2.8. Knowledge management

Knowledge activities and products	8 capacity building activities have been held during this period, including the launch of the 3 guidelines (on Local Planning, Benefits of Connecting a District Energy Network, and Opportunities for the Real State sector); four tailored trainings to the District Energy Roundtables (focused on Regulation, Technologies, Project Development and Case Studies); and one stakeholder's workshop with the 16 projects to exchange experiences and lesson learned of Line 1. The National District Energy Office is advising the three regional district heating roundtables that have been established during this reporting period: Maule region (capital city, Talca), Aysén region (capital: Coyhaique), and Araucanía region (capital city, Temuco). 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 2023.
--	--

	<p>The United Nations Environment Programme, under the framework of the Cool Coalition and the global District Energy in Cities Initiative, organized a week-long study tour and workshop series on district cooling and passive cooling in Singapore from the 7th to the 12th of May 2023. Two representatives from the NDEO and the Director of the Recoleta + Independencia pilot project, together with an international delegation of approximately 50 stakeholders from countries around the world, participated in dedicated workshops on national and local policy development, technology, business models, and financing of district energy and passive cooling projects. A social media and Marketing Campaign will incorporate the work of the Regional Roundtables, the learnings from the Study Trip, and the UFRO Diploma Invitation in 3 of the 12 messages of the awareness-raising material about district energy benefits, technologies, lessons learned, new regulations, and market opportunities.</p>
<p>Main learning during the period</p>	<p>The main learning during this period was that local conditions and opportunities in vibrating cities like Talca are always changing, so the involvement with local stakeholders is key in every step of a project development. For example, between the prefeasibility and the basic engineer of Talca project, a new urban development was being planned right in the surrounding areas. As the project is discussed and reviewed every two weeks by the Regional Roundtable and the national district energy office, we knew about this planning and proposed an interrelated project to the local planners and regional service of housing. By joint efforts under a common goal, we could embrace this opportunity and improve both projects.</p>

2.9. Stories to be shared.

<p>Stories to be shared</p>	<p>In the context of urban housing planning, the implementation of district energy systems has proven to be an efficient and sustainable solution to meet the energy needs of communities around the world.</p> <p>In the case of the southern cities in Chile, the implementation of a district heating system in new urban development can offer several benefits. Some of them are:</p> <ol style="list-style-type: none"> 1. Reduction of particulate matter emissions: By centralizing the production of heat, it is possible to implement cleaner and more efficient technologies in the energy source, which results in a decrease in air pollution. This contributes to improving air quality and reducing health and environmental impact. 2. Energy efficiency: District heating uses more efficient energy sources compared to individual heaters or boilers in each building. This allows better use of resources and a reduction in total energy consumption. 3. Less maintenance: Having a single, centralized heat source reduces the need for individual maintenance in each building, which can simplify management and lower costs in the long run. <p>The Coyhaique project incorporates the residential sector, and the Ministry of Environment developed an early citizen participation process as a way to involve the neighbours and end-users in the sector of Escuela Agrícola. This successful strategy concluded with the strong commitment of the neighbours to the project, and all of them signed Letters of Interest to connect to the system in the future.¹</p> <p>Likewise, the Regional Service of Housing in Talca, Maule region, is developing a greenfield sustainable urban community called Habitational Urban Plan (HUP). With the support of the GEF, Talca will implement a district heating system in the HUP that incorporates geothermal to supply heat and hot water to the 254</p>
------------------------------------	--

¹ <https://mma.gob.cl/con-presentacion-de-acuerdos-de-pre-inversion-marcan-hito-en-el-proyecto-de-calefaccion-distrital-para-el-sector-escuela-agricola/>

	<p>families in the 4 multifamily dwellings in an efficient and sustainable manner, reducing carbon emissions and decreasing reliance on fossil fuels. Talca illustrates how district energy can be a cornerstone for creating sustainable urban communities.</p> <p>It is expected that if the pilot projects are successful and prove to be an effective and sustainable solution, future urban housing plans in Chile will incorporate district heating technology and be a model for public and private greenfield projects.</p>
--	---

PROJECT PERFORMANCE AND RISK

3.1 Rating of progress towards achieving the project outcomes (Development Objectives)

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
Objective:	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	30%	<p>3 cities with investment roadmaps in in progress.</p> <p>3 Cities' Master Plans are planned to be developed during the 2nd semester of 2023, to improve their technical, economic, commercial, and regulatory design.</p> <p>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 Unit. The 3 cities are Santiago (including two communes: Recoleta and Independencia), Talca, and Coyhaique.</p> <p>In addition, there are heat maps in 11 cities. Therefore, the target looks very likely to be met.</p>	S

² 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).

	Greenhouse Gas Emissions Mitigated (metric tons of CO ₂ e) (Project Core Indicator 6)	0	n.a.	Direct emission savings (over 3 years): 40,000 tCO ₂ e	0%	<p>0 tCO₂e, as project pilots have not yet started.</p> <p><u>Direct emission reductions from pilot projects:</u> Considering a term of 20 years for the analysis of emissions as Project Core Indicator 6, the projects would have emission reductions of 120,560 tCO₂e by 2040:</p> <ul style="list-style-type: none"> The estimated CO₂e emissions reduction from projects (Recoleta + Independencia and Talca) is around 3,650 tCO₂e/year; the Escuela Agrícola in Coyhaique aims to reduce 400 tCO₂e/year. It is assumed that these projects will start their operation in late 2025 or early 2026. Adding the three projects, the direct savings over three years would be 12,150 tCO₂e, and over 20 years would be 56,700 tCO₂e. 11 projects under are still in the pipeline of candidates for implementation. In this case, it is expected they start in 2028 and an additional 5,322 tCO₂e/year could be saved (63,860 tCO₂e/year by 2040). <p><u>Direct emission reductions from master planning:</u> Three district energy Master Plans will be developed under the GEF Programme for the pilot cities: R+I, Talca, and Coyhaique. Considering the methodology of Chile's Heat Roadmap and the Temuco master plan results to extrapolate to the 3 pilot cities' demand, the total expected CO₂ emission reduction would be 3,322,800 tCO₂e to 2040.</p> <ul style="list-style-type: none"> R+I = 1,632,800 tCO₂e Talca = 785,200 tCO₂e Coyhaique = 904,800 tCO₂e <p>Considering all of the direct emission reduction indicated above, i.e., the pilots and the projects in pipeline for 20 years and the Master Plans deployments, the total amount equals 3.444.340 tCO₂e.</p> <p>The contribution of the project to reducing emissions would be even larger considering the</p>	S
--	--	---	------	---	----	--	---

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
						indirect emissions, taking into account the goal of the Chilean energy policy of 500.000 users connected to a district energy system to 2050.	
	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%	<p>0, as project pilots have not yet started.</p> <p>An estimation of 807.000 people will be beneficiaries, only considering the 2 projects in L2. The estimation of beneficiaries is calculated by the users of schools, hospitals, university campuses, and the residential sector.</p> <p>About 50% are women. The sources of the data correspond to public accounts of hospital discharges and employees of the health institutions (inpatients in the cases of psychiatric institutions), and data on the number of students and employees published on the websites of the educational institutions. Some assumptions were made to disaggregate some numbers.</p>	S
Outcome 1, indicator 1a:	National District Energy Office (NDEO) is established	0	n.a.	1	100%	<p>1, Accomplished.</p> <p>The National District Energy Office was established in September 2020 and is fully operational. A team of 5 engineers is working daily on the execution of the GEF Project: 2 Directors (one from the Ministry of Energy and one from the Sustainable Energy Agency), 1 Project manager, and 2 senior engineers also hired by the Agency.</p>	S

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
Outcome 1, indicator 1b:	Number of municipalities that develop district energy projects	0	n.a.	5 Municipalities	100%	<p>8, Accomplished.</p> <p>The following municipalities or local governments have received support to develop their district energy pre-feasibility projects:</p> <ol style="list-style-type: none"> 1. Cochrane 2. Renca 3. Recoleta 4. Independencia 5. Talcahuano 6. Talca 7. Chillán 8. Coyhaique <p>In addition, 8 projects have been proposed by private companies to the Call for support, and ONED has developed the prefeasibility studies.</p>	HS
Outcome 2 indicator 2a:	Number of revised financial schemes	0	n.a.	1	100%	<p>3, Accomplished.</p> <p>With the support of the project:</p> <ul style="list-style-type: none"> - Woodstoves Change out Programme criteria reviewed and propose DES incentives to the Ministry of Environment - Building's Thermal Retrofit Programme criteria reviewed and propose DES incentives to the Ministry of Housing 	HS

Outcome 2 indicator 2b:	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	30%	<p>US\$ 3,050,000, in progress.</p> <p>Public financial support has been capitalized for the development of the pilot projects.</p> <p>The city of Coyahique has leveraged 2,120,000 USD from the regional government of Aysén to subsidize the Escuela Agrícola project.</p> <p>The Municipalities of Recoleta and Independencia will grant a land for the Concession, to build the thermal plant. This has a commercial value of 620,000 USD.</p> <p>The municipality of Talca will grant a land for the concession, to build the thermal plant in a central sector. This terrain has a commercial value of 250,000 USD.</p> <p>The regional service of the Ministry of Housing and Urbanism (MINVU) has committed to building the internal distribution pipelines inside the residential buildings of the new urban development Cornelio Baeza, a greenfield sustainable Habitational Urban Plan (HUP). The building works will cost MINVU around 60,000 USD.</p> <p>In addition, an estimation of around USD 9,8 million will be capitalized from the private sector for pilot projects.</p> <ul style="list-style-type: none"> • R+I project presents a CAPEX of 7.3 million dollars as a private investment. It is worth mentioning that 6 out of 7 bidders to the call for proposals of the basic engineering of the R+I project are real estate, energy developers and/or ESCOs. • Talca project CAPEX estimation is 2.5 million dollars of private investment. 	S
Outcome 3 indicator 3a:	Number of technical and planning regulations or standards developed and	0	n.a.	2	100%	4, accomplished.	HS

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
	prepared for adoption at national level					<p>Four actions have been developed to create a district energy regulatory framework considering national and international experiences, regarding the technical and planning best practices.</p> <ol style="list-style-type: none"> 1) Definition of district energy and general scope for district energy project development in a regulation (Circular 345) of the Urban Development Division, Ministry of Housing. 2) Proposal of modification of the urban normative, called General Ordinance of Urban Planning and Construction, that would allow the location of thermal power plants on the soil used currently classified as equipment. 3) National District Energy Law proposal is designed by the Ministry of Energy. The proposal considers a draft of technical regulation with international standards. 4) Proposal of a methodology of social evaluation of district energy projects for Chile, is under development by the Ministry of Energy and the Ministry of Social Development. This methodology would support district energy projects to leverage subsidies from the National Investment System (prioritization of government funds). <p>An additional action is under development to analyze different business schemes under Cooperative Models. The study is in charge of the Ministry of Energy.</p>	

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
Outcome 3 indicator 3b:	Number of cities with new regulations or policy actions on district energy prepared for adoption.	0	n.a.	2 cities	75 %	<p>3, in progress</p> <p>Recoleta and Independencia municipalities have signed an agreement to jointly concession the district energy project. Recoleta will be the leader and manager of the Concession during its lifespan. Recoleta has granted a terrain with soil-use “Energy Infrastructure” to locate the district energy thermal plant.</p> <p>Both municipalities are working on modifying their respective territorial planning ordinance (communal regulatory plane, CRP) to incorporate mixed land uses that include energy infrastructure in a wider range of communal areas.</p> <p>The Maule Regional Service of Housing (Talca city) has signed an agreement with the Sustainable Energy Agency to integrate district energy into a greenfield sustainable urban community called Habitational Urban Plan (HUP). The Service will call for bidders to design and build the HUP taking into consideration the results of the basic engineering of the Talca district energy project.</p> <p>The municipality of Talca has granted a terrain with land-use “Energy Infrastructure” to locate the district energy thermal plant, and it is working on modifying its CRP to incorporate mixed soil uses that include energy infrastructure in a wider range of communal areas.</p>	S

<p>Outcome 4 indicator 4a:</p>	<p>Number of additional requests to the NDEO</p>	<p>0</p>	<p>n.a.</p>	<p>5 requests</p>	<p>100%</p>	<p>10 + requests, Accomplished.</p> <p>More than 10 municipalities, as well as other requests from the private sector and academia, have been received after Line 1 of the Call for Support closed.</p> <ol style="list-style-type: none"> 1) 1 request for Legal and Commercial advice on district energy Concession: The Regional District Energy roundtable in Aysén is promoting district energy deployment as a way to address the region's air pollution. The Escuela Agrícola project has leveraged public funding from the Regional Government for Design and Construction. The project is currently under Basic Engineering studies, and the regional roundtable has requested the NDEO for support as a technical counterpart and for a piece of Legal and Commercial advice on the district energy Concession. 2) 3 Scholarships awarded: The municipalities of Recoleta and Talcahuano, and the Aysén Regional Ministerial Secretary of Environment received scholarships from the ASE to attend the Diploma on District Energy dictated by the Universidad de la Frontera. 3) 1 Training on district energy incentives for the Decontamination Plans: 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. 4) 2 Requests for advising in regional district energy roundtables: The regional 	<p>HS</p>
---------------------------------------	--	----------	-------------	-------------------	-------------	--	-----------

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
						<p>district energy roundtables of Maule and Araucanía requested the National District Energy Office to act as a technical advisor. The NDEO attends regional online meetings every two to three weeks, to share lessons learned and best practices on regulation, technical, and economic project development.</p> <p>5) 2 Pieces of training on district energy planning and project development: The regional district energy roundtables of Maule and Araucanía requested the National District Energy Office to train on project development and city-wide master planning.</p> <p>1 Request to keynote speaker in University Diploma: Universidad de La Frontera (UFRO) requested the NDEO to speak in the second version of the Diploma in District Energy, which will be held during the second semester of 2023.</p>	

Project Objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating ²
Outcome 4 indicator 4b:	Number of people trained in workshops disaggregated by gender	0	n.a.	50	100%	<p>1.600 in total, disaggregated by 174 women, 453 men, and 973 non-identified because we did not ask about gender in the first four activities. Accomplished.</p> <p>The Chilean reality on energy topics use to attract more men than women, but the project obtains similar rates of participation of women in activities such as energy planning.</p> <p>The United Nations Environment Programme, under the framework of the Cool Coalition and the global District Energy in cities Initiative, organized a week-long study tour and workshop series on district cooling and passive cooling in Singapore from the 7th to 12th, May 2023. Two representatives from the NDEO and the Director of the Recole+Independencia pilot project, together with an international delegation of approximately 50 stakeholders from countries around the world, participated on dedicated workshops on national and local policy development, technology, business models and financing of district energy and passive cooling projects.</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 2023. 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 (Implementation Progress)

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
COMPONENT 1: Establishment of a National District Energy Office (NDEO)					
Output 1.1: 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). Deliverables: Establishment of the NDEO in the Sustainable Energy Agency.	HS
Output 1.2: 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. Deliverables: Excel tool with a national project database. Report with the list of the prioritized projects in terms of the district energy potential identified by the heat maps.	HS

³ Outputs and activities (or deliverables) as described in the project logframe (and workplan) or in any updated project revision.

⁴ The completion dates should be as per latest workplan (latest project revision).

⁵ 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.

⁶ To be provided by the UNEP Task Manager

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
<p>Output 1.3: 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.</p> <p>A methodology approach 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 a pre-feasibility stage.</p> <p>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 (https://www.agenciase.org/energia-distrital/).</p> <p>Deliverables: NDEO's internal procedures to systematize and standardize the technical-economic-regulatory support for project development. Terms of Reference for the open call for project support, published online. Energy demand estimation and economic-technical pre-feasibility tool.</p>	HS

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
<p>Output 1.4: Up to 10 projects are reviewed and their financial feasibility is improved</p>	23-apr-2023	100%	100%	<p>Status: Achieved.</p> <p>The original goal was to select up to 10 projects in two rounds of selection but just one round was developed under the open call for project proposals.</p> <p>The NDEO, together with the PSC, decided not to limit it to a maximum of 10 projects, but a minimum of 10, in a permanent application process (until December 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.</p> <p>16 projects have graduated from this line of the Call by December 2022, having assisted local governments and private developers to improve the project's financial feasibility, address financial and regulatory barriers, design the business model and outline the procurement plan.</p> <p>Line 1 is closed, and applications for Line 2 were received during the year 2023.</p> <p>During the first semester of 2023, a workshop with the stakeholders of the projects (project developer, municipalities, potential end users, etc.) was delivered, to exchange experiences and lessons learned.</p> <p>Deliverables: 16 projects are selected, reviewed and their financial feasibility is improved (available project fact sheets online https://sitio.energiadistrital.cl/documentos-de-apoyo/#fichas) Stakeholder workshops to exchange experiences and lessons learned.</p>	HS
COMPONENT 2: Demonstration of financial feasibility of district energy projects					

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
<p>Output 2.1: District Energy financial incentives are reviewed to be included in a proposal for the National District Energy Financial Support Programme.</p>	23-sept-2023	50%	50%	<p>Status: On Progress</p> <p>NDEO has reviewed the criteria of the “Woodstove Change Out” Program (Ministry of Environment) and “Buildings’ thermal retrofitting” Program (Ministry of Housing), as the work plan.</p> <p>The NDEO reviewed other current public financing programs in Chile, particularly those related to the Production Development Corporation (CORFO).</p> <p>Currently the project is in the process of hiring an external service to identify Subnational, National, and international funding mechanisms to leverage co-finance and propose a National District Energy Financial Support Programme. This activity has been extended during Project Revision 2 and the budget was redistributed to hire the consultancy.</p> <p>Deliverables: Letter for the Ministry of Housing with the Building’s Thermal Retrofit Programme analysis and incentives. Minute for the Ministry of Environment with the Woodstoves Change out Programme review and proposed incentives. Excel database with other different National financial mechanisms identified. (To be delivered in the next period: Reports of the consultancy and a new proposal for the National District Energy Financial Support Programme)</p>	S

<p>Output 2.2: Detailed project development undertaken to bring up to 3 pilot projects from pre-feasibility to tender</p>	<p>23-apr-2024</p>	<p>50%</p>	<p>70%</p>	<p>Status: On Progress.</p> <p>This activity has progressed well during the last year and three high-potential pilot projects are selected to receive support from the National District Energy Financial Support Programme.</p> <p>The Recoleta+Independencia (R+I), Talca, and Coyhaique projects graduated Line 1 of the Call. R+I and Talca projects entered the Line 2 of capital support, and the Coyhaique project leveraged regional funding for implementation, being the 3 candidates for piloting in Chile.</p> <p>The R+I project is bankable as it will serve district heating and cooling to anchor clients, so it does not need a subsidy from the programme's capital support.</p> <p>The Talca project will serve both residential buildings and anchor clients, so needs a subsidy from the capital support programme to connect the residential sector.</p> <p>The Coyhaique project will serve residential and public buildings and has leveraged regional government's funding to build and operate, so it does not need capital investment from the programme.</p> <p>Talca and Coyhaique have land committed to locating the thermal power plants, but negotiations remain. The Recoleta+Independencia project began high level negotiation with government authorities to obtain an area into the Psychiatric Hospital.</p> <p>The three pilot projects are under basic engineering, where detailed project development is being undertaken to bring them from pre-feasibility to feasibility.</p> <p>Technical, legal and administrative Terms of Reference for the Concessions of Construction and Operation will be developed after the feasibilities.</p> <p>Deliverables: Recoleta + Independencia and Talca projects Acts of assignment of Financial Support under Line 2, delivered by NDEO. Terms of Reference for the basic engineering of the three selected projects.</p> <ul style="list-style-type: none"> • Talca: https://www.mercadopublico.cl/Procurement/Modulos/RFB/DetailsAcquisition.aspx?qs=LOSMN7bbybARu3pEiUEqhA== 	<p>MS</p>
---	--------------------	------------	------------	---	-----------

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
				<ul style="list-style-type: none"> Recoleta+Independencia: https://www.mercadopublico.cl/Procurement/Modulos/RFB/DetailsAcquisition.aspx?qs=wvG8m7OkJt98Rv/M7L4KtA== Coyaique: https://www.mercadopublico.cl/Procurement/Modulos/RFB/DetailsAcquisition.aspx?qs=Hjo3t8mqegub4hQ8dYCBVw== (To be delivered in the next period: Technical, legal and administrative Terms of Reference)	
Output 2.3: Calls for tender for the construction and operation of the 3 pilot projects are launched and bidders selected	23-July-2024	0%	0%	Status: Not started. Two external consultancies will be hired to work on the technical and legal/administrative Terms of Reference for the Concession. These services will also include contractual arrangements and procurement documents for the Concession of Construction and Operation. In addition, the NDEO will work with the Chilean Chamber of Construction and the National ESCOs Association to conduct validations and market sound activities. These two external services and activities have been incorporated into Project Revision Number 2, to address the identified risk of Investors not being interested in applying for tenders. To save time, work will be done in parallel on the preparation of the ToR for the Concession, while the basic engineering studies are being carried out. The objective is to launch the bidding process, select bidders for the construction and operation of the projects and have the co-finance from the capital support programme ready for disbursement during the first semester of 2024. (To be delivered in the next period: Calls for tender for the construction and operation of the 3 pilot projects are launched and bidders selected)	MS

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
<p>Output 2.4: 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-May-2024	0%	0%	<p>Status: Not started.</p> <p>This activity will start the second semester of 2023 and will include a city-wide long-term Master Plan of district energy scale-up and Investment Roadmap for each selected city (R+I, Talca and Coyhaique).</p> <p>The hiring of the consultancy that will develop the Master Plans is being carried out by UNEP, and the Terms of Reference are being designed while waiting for the projects to move forward.</p> <p>(To be delivered in the next period: 3 District energy investment roadmaps Targeted capital support for up to three pilot projects granted. Co-finance from the NDEFSP ready for disbursement)</p>	MS
<p>COMPONENT 3: Designing an enabling regulatory framework at national and local level</p>					

<p>Output 3.1: 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-mar-2023	90%	100%	<p>Status: Achieved</p> <p>Five actions to create a district energy regulatory framework considering national and international experiences, regarding the technical and planning best practices have been developed.</p> <ol style="list-style-type: none"> 1) Definition of district energy and general scope for district energy project development in a regulation (Circular 345) of the Urban Development Division, Ministry of Housing. 2) Proposal of modification of the urban normative, called General Ordinance of Urban Planning and Construction, that would allow the location of thermal power plants on the soil used currently classified as equipment. 3) National District Energy Law proposal is designed by the Ministry of Energy. The proposal considers a draft of technical regulation with international standards. 4) Proposal of a methodology of social evaluation of district energy projects for Chile, is under development by the Ministry of Energy and the Ministry of Social Development. This methodology would support district energy projects to leverage subsidies from the National Investment System (prioritization of government funds) . 5) An additional action is under development to analyze different business schemes under Cooperative Models. The study is in charge of the Ministry of Energy. <p>Deliverables: Circular N°345: Definition of district energy and general scope for district energy project development. Modification of the General Ordinance of Urban Planning and Construction participatory process (https://participacionciudadana.minvu.gob.cl/consultas-ciudadanas-virtuales/consulta-modificaci%C3%B3n-oguc-en-materia-de-emplazamientos-de).</p> <p>A National District Energy Law proposal. Report: Analysis for the elaboration of a methodology of social evaluation of district energy projects for Chile</p>	HS
<p>Output 3.2: Guideline for municipalities on how to incorporate the technical and planning regulations and standards of output</p>	23-apr-2024	100%	100%	<p>Status: Achieved.</p> <p>NDEO has made further progress in technical and planning regulations in order to improve the knowledge at the local</p>	HS

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
3.1 into the local regulatory framework are developed				<p>level. It has analyzed existing regulatory instruments at the local level to identify the areas where district energy could be incorporated, including the concessional schemes under which district energy could be commercialized.</p> <p>4 guidelines have been developed for the public sector, including the municipalities: three normative guidelines on permits, district energy in the territorial instruments, and concessional models), and one guideline of district energy project development for city planners.</p> <p>Deliverable: Guidelines published on the website https://sitio.energiadistrital.cl/documentos-de-apoyo/#guias</p>	
COMPONENT 4: Outreach, trainings and dissemination of results to scale-up the market					
Output 4.1: Methodologies and tools to build capacity among local stakeholder on project development, including a cost-benefit tool are developed and delivered through.	23-ene-2024	80%	100%	<p>Status: Achieved.</p> <p>Regarding methodologies and tools, the cost-benefit tool was developed, and will be improved with the proposed methodology of social benefits findings.</p> <p>Regarding dissemination of results and findings to inform the market and lower the perception of risks; fact sheets documenting results and lessons learned from the three pilot projects and a guide summarizing technical and policy regulations framework for the private sector are located on the website.</p> <p>Deliverables:</p> <ul style="list-style-type: none"> • An excel cost-benefit tool. • Dissemination material was developed: studies, reports, videos, guidelines and material. (Available on the website www.energiadistrital.cl) • Fact sheets of the three pilots with lessons learned and main technical-economic characteristics. <p>Guide summarizing technical and policy regulations framework for the private sector are published on website</p>	HS

Outputs/Activities ³	Expected completion date ⁴	Implementation status as of 30 June 2022 (%) (Towards overall project target)	Implementation status as of 30 June 2023 (%) (Towards overall project target)	Progress rating justification ⁵ , description of challenges faced and explanations for any delay	Progress rating ⁶
<p>Output 4.2: Outreach campaign and awareness raising material is designed and disseminated to the stakeholders</p>	<p>23-may-2024</p>	<p>40%</p>	<p>70%</p>	<p>Status: On progress.</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. The website is hosted by the Agency of Sustainability Energy, and English translation will begin in 2024.</p> <p>Outreach campaign and awareness-raising material is designed and disseminated to the stakeholders. 13 workshops and webinars have been delivered.</p> <p>A social media and marketing campaign has been added to this output under Project Revision 2, to reach a broader audience on the district energy benefits. This activity will begin in the second semester of 2023.</p> <p>Deliverables: Webinars broadcasts (Available on the website www.energiadistrital.cl) To be delivered: Four capsules, videos, and/or social media content. Website translated to English</p>	<p>S</p>

4. Risk Rating

4.1 Table A. Project management Risk

Please refer to the **Risk Help Sheet** for more details on rating.

Risk Factor	EA's Rating	TM's Rating
1. Management structure – Roles and responsibilities	L	L
2. Governance structure – Oversight	L	L
3. Implementation schedule	L	L
4. Budget	L	L
5. Financial Management	L	L
6. Reporting	L	L
7. Capacity to deliver	L	L

If any of the risk factors is rated a Moderate or higher, please include it in table B below.

4.2 Table B. Risk-Log

Risk	Risk affecting:	Risk Rating							Variation respect to last rating	
	Outcome / outputs	CEO ED	PIR 1	PIR 2	MTR	PIR 3 (this PIR)	PIR 4	PIR 5	Δ	Justification
<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		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	All outcomes & outputs: particularly Outcome 1.2 Outputs 1.4, 2.2, 2.3, 2.4	M	M	L		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

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)		M	M	L		L			=	2) So far, the support from local governments has remained intact, even after the changes of administration due to the 2020 municipal elections. Despite this, in mid-2024, municipal elections will be conducted and is expected that the current mayors could be changed
3) Lack of interest from local authorities to launch requests for proposals to build the project.		M	L	L		L			=	3) According to the concessional vehicle of the Talca projects, this will be constructed under the leadership of the Regional Housing Service which depends on the Ministry of Housing and Urban Planning (MoH, is part of the Project Steering Committee). This strengthens the institutional technical capacity to build urban infrastructure. For the concessional scheme for Recoleta and Independencia project, there is a signed collaboration agreement between the two municipalities and the Sustainable Energy Agency, and there is one agreement under design to establish the concession's duties and responsibilities and between the 2 municipalities, including the tender process and bidder's selection. The concessional scheme for the Coyahique pilot project is not defined yet but the regional government has committed capital support and the regional authorities are part of the regional district energy Roundtable
4) City does not want to adopt city-wide plan of policies and investments		M	M	L		L			=	4) The municipalities and regional services/governments that are receiving support to move on to the implementation of the pilot projects maintain their interest intact. There is no significant risk of not being motivated to adopt a city-wide plan of policies and investments.
<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		L			=	The former Director of the NDEO is now the Executive Director of the Sustainable Energy Agency, so a new NDEO director has taken her place. His name is Clément Demons, head of the Local Infrastructure and Buildings Unit. He has 10+ years of experience in energy efficiency and urban infrastructure. Felipe Mellado, Director of the NDEO from the Ministry of Energy remains in his position. The former UNEPs national technical advisor on district energy, Pilar Lapuente, has been hired by the Sustainable Energy Agency to act as Project Manager in the PMU. In terms of the NDEO professionals, the last hiring process was successful because 81 applications were received and the NDEO hired the best candidate, having now 2 engineers with

										extensive prior experience in district energy and energy efficiency.
<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		L			↓	The Ministry of Energy requested funding to the Ministry of Finance, under the 2024 Budget Law design, for the NDEO operations, covering the salaries of the team for the whole 2024 (beyond the GEF7 execution period) and budget for engineering studies and capital support. The Ministry of Energy together with the Sustainable Energy Agency has applied for a GEF 8 and awarded the Net Zero and Nature Positive line to implement a project integrating renewable energies and energy efficiency, including district energy. The execution would begin in 2025 and will cover the NDEO operation until 2028.
<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 tender	Outcome 2.2 Outputs 2.1, 2.2, 2.3	M	M	M		M			=	1) Despite there is advance in addressing this risk, it is decided to maintain this latent because uncertainty about market expectations remains high and the economic international situation is not fully recovered. Some of the actions that have been taken are that regional governments will tender the concession, not the municipalities. In particular, the leadership of the regional Service of Housing makes private bidders more confident to bid in long-term tender processes and high-level investment. In addition, business rounds are planned for August 2023 with the private sector (including the national ESCOs association) to present project opportunities and encourage applications for the tender process.
2) Projects fall through and are not investable		M	M	L		L			=	2) It is decided to maintain the risk rating low, as the project pre-feasibilities reflect the pilots are bankable with the capital support. During the basic engineering phase, sensitivity analysis and scenarios will be performed, and the project designs will be subject to economic evaluation, in order to optimize investment conditions.
<u>Contributions from stakeholders (including co-finance)</u> Co-finance partners remove support for the project	All outcomes & outputs	L	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	Outcome 2.2	M	M	L		L			=	This is a low risk as there are two concessional schemes suitable for district energy, which are commonly used for public infrastructure projects. In terms of commissioning and expected performance, there is also a low risk as the district energy

commissioning as planned in accordance with the expected performance										technologies and components- i.e., energy plants, networks, and connections- are well-known by energy developers in Chile.
<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.	Outcomes 3 and <i>Outcome 4.2</i> <i>Outputs 2.2, 2.3, 4.1, 4.2</i>	M	M	L		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.
2) End users are not interested in connecting to a district energy network.		M	M	M		L		↓		2) The pilot projects will include public buildings and greenfield residential multifamily buildings. Regarding institutional clients, they are sensitive to service tariffs and security of supply, conditions that have been recognized in bilateral meetings with each of them. For anchor clients, a reduced tariff is offered, and the Coyhque project has raised connection interests' letters. In terms of the residential sector, the Talca project will connect a greenfield project that will include the internal distribution system from the beginning, incorporating the radiators at the cost of the project, not the families. The experience in Chile with the "5V" pilot project in Temuco, shows that once connected, the reversion rate of connected residential customers is low
3) Cities are not attracted by the outreach activities.		M	M	L		L		=		3) The participation of the municipalities and regional governments in the dissemination activities has been positive. It is of special interest that the three-district energy regional roundtables have requested the NDEO to participate as a technical advisor. As an example, four tailored pieces of training were held during this period, from requests of the Roundtables. In addition, Universidad de La Frontera, Temuco city, requested support from the NDEO to facilitate speakers in the second version of the Diploma in District Energy.
4) Negotiations with landowners will take longer than expected.		n.a	n.a	M		M		=		4) The NDEO has conducted bilateral meetings with the pilot municipalities, the regional housing services, the Ministry of National Assets, and public end-users that have enough space to allocate the thermal plant.

										Despite this, negotiations could take longer than expected.
Pilot implement										
1) Limited availability of land with suitable land use to locate thermal power plants action.		n.a	n.a	M		L			↓	This risk is low, as the pilot projects advance to this stage because they have suitable land use to locate thermal power plants. This has been ratified by the legal advice and municipality works departments.
2) New risk: Institutions in charge of the concession take longer than expected to tender.		n.a	n.a	n.a		M			N/A	Now that the pilot projects are in their latest stages of development, the risk that public institutions take longer than expected in tendering the concession for construction and operation has been raised, as district energy is a new market in Chile. The rating of this risk is M as the NDEO is working on the procurement accompaniment.
Consolidated project risk		n.a	M	M		L			↓	The overall level of risk is Low. The main risk is that negotiations with landowners and the tender process could take longer than expected, and this could delay the pilot implementations.

Table B. Outstanding Moderate, Significant, and High risks

Risk	Actions decided during the previous reporting instance (PIR _{t-1} , MTR, etc.)	Actions effectively undertaken this reporting period	Additional mitigation measures for the next periods		
			What	When	By whom
<p>Financial closure of pilots 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>1) Generate a questionnaire to identify key challenges in investing so the investors have enough information to invest.</p> <p>2) Organize an investor workshop/event to bring together investors and proponents, Chilean engineering companies and developers, and cooperation of commercial offices.</p> <p>3) Analyse similar bidding processes to guarantee that the project pilots do not fail to attract investors or developers, and share this analysis with the project pilot developers, including recommendations on how to achieve successful bidding processes.</p>	<p>- NDEO has met and requested support from the Danish Energy Agency, Business Finland, Business Sweden, the Swiss International Cooperation, the Chilean Chamber of Construction, and the Chilean Association of ESCOs (ANESCO) to promote the projects among their Investor networks.</p> <p>- A Webinar on Technologies and Opportunities for the ESCOs and Real Estate developers was held on August 2022.</p> <p>- UNEP's Cities Unit and the Climate Change Center in Copenhagen were consulted of the international bidding process to discuss the</p>	<p>1) A consultation with the national ESCO companies and associations will be delivered, including a questionnaire to identify key private economic indicators.</p> <p>2) Business rounds with the national and International ESCOs and Embassies will be delivered the</p>	<p>1) 7th of August 2023</p> <p>2) December 2023</p>	<p>Ministry of Energy, NDEO.</p>

		element that we could integrate in the Chilean process.			
<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>4) Negotiations with landowners take longer than expected.</p>	<ol style="list-style-type: none"> 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. 2) Launch all the informative material generated by the project on the website. 3) Disseminate the Guidelines for end users in massive activities and through the promoters of evaluated projects. 4) Promote the role of ambassadors to those current users of district energy pilots, so that they can share experiences. 5) Hold a consultation meeting with the end users and involve them from the planning stages. 6) Develop a cooperative model of ownership of district energy systems, to introduce a commitment of end users. 7) Continue the negotiating table with the Huachipato company, in order to present the project to the Board of Directors. 8) Develop the negotiating table with CBB. 9) Continue the negotiating table with the University of Chile and the Horwitz Psychiatric Institute. 10) Try to reactivate the negotiating table with the UACH. 	<ul style="list-style-type: none"> - Several meetings with the municipalities of Recoleta, Independencia, and Talca, the Regional Services of Urban Development, the Ministry of National Assets, and the Horwitz Psychiatric Institute were held to analyze terrain transfer options. - Fact sheets of the pilot projects are uploaded on the website. - A webinar to launch the Guideline for end-users was conducted on July 2022, where the benefits of district heating connection were presented, including the promotion from an ambassador who is currently connected to the Temuco 5V pilot project. - End users' consultation was developed with the hospitals of the Recoleta and Independencia project and the public institutions of the Talca project. An early-stage citizen's participatory process was conducted in Coyhique, which was finalized successfully by signing letters of interest by end-users. - Regarding the Talcahuano and UACH project (L1), a final meeting with the Companies and the Austral University, respectively, was conducted to try to negotiate the continuity of the project, with no positive outcome. The 	<ol style="list-style-type: none"> 1) High-level meetings with the Horwitz Psychiatric Institute will continue to occur, to finalize the terrain negotiations. 2) Meetings with the Regional District Energy Table of Maule members: the Municipality of Talca, the Regional Services of Urban Development, and the Ministry of National Assets will be conducted to ensure land allocation. 3) Search for private terrains to buy or rent, including those of the end-users. 	1-Second semester 2023.	NDEO, Ministry of Energy

		projects did not continue to the L2.			
<u>Pilot implement</u> 2)New risk: Institutions in charge of the concession take longer than expected to tender.			<ol style="list-style-type: none"> 1) Commercial accompaniment about the identified Concessional Scheme 2) Training and legal advice on the procurement process 3) 3 scholarships awarded to public institutions that will oversee the procurement process. 4) High-level ministerial meetings and talks to plan actions. 	<ol style="list-style-type: none"> 1) August 2023 2) August 2023 3) October 2023 <p>During the 2nd semester of 2023 and 1st semester of 2024</p>	NDEO, Ministry of Energy

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.
Moderate 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

5.1 Table A: Listing of all Minor Amendment

- | | |
|--|---|
| <input type="checkbox"/> Results framework | <input type="checkbox"/> Minor project objective change |
| <input checked="" type="checkbox"/> Components and cost | <input type="checkbox"/> Safeguards |
| <input type="checkbox"/> Institutional and implementation arrangements | <input type="checkbox"/> Risk analysis |
| <input type="checkbox"/> Financial management | <input type="checkbox"/> Increase of GEF project financing up to 5% |
| <input checked="" type="checkbox"/> Implementation schedule | <input type="checkbox"/> Co-financing |
| <input type="checkbox"/> Executing Entity | <input type="checkbox"/> Location of project activity |
| <input type="checkbox"/> Executing Entity Category | <input type="checkbox"/> Other |

Minor amendments	Redistribution of the budget and reprogramming of activities.
-------------------------	---

5.2 Table B: History of project revisions and/or extensions

Version	Type	Signed/Approved by UNEP	Entry into Force (last signature Date)	Agreement Expiry Date	Main changes introduced in this revision
Original legal instrument	PCA	May 22, 2020	May 22, 2020	May 15, 20223	
Revision	Revision 1	February 23, 2021	February 23, 2021	May 15, 20223	Re-phase the unspent balance to future years and to reallocate travel budget lines due to movement restrictions of the COVID-19 situation.
Amendment and Extension 1	Revision 2	May 5, 2023	May 5, 2023	July 31, 2024	To extend the project technical completion date to allow the Executing Agency (EA) and UNEP-Cities Unit to finalize the pending activities as requested by the EA

GEO Location Information:

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate. Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com> Please see the Geocoding User Guide by clicking [here](#)

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