



CONFERENCIA INTERNACIONAL ENERGÍA DISTRITAL LAC 2025



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Potencial de Calefacción Distrital en Chile



Antecedentes

Calefacción y enfriamiento doméstico en Chile:

- El 35% del consumo energético primario de Chile proviene de calefacción y enfriamiento.
- El 40% de la calefacción doméstica se utiliza con leña.
- El 85% de las emisiones de partículas finas provienen de la calefacción con leña.

Objetivo de Largo Plazo:

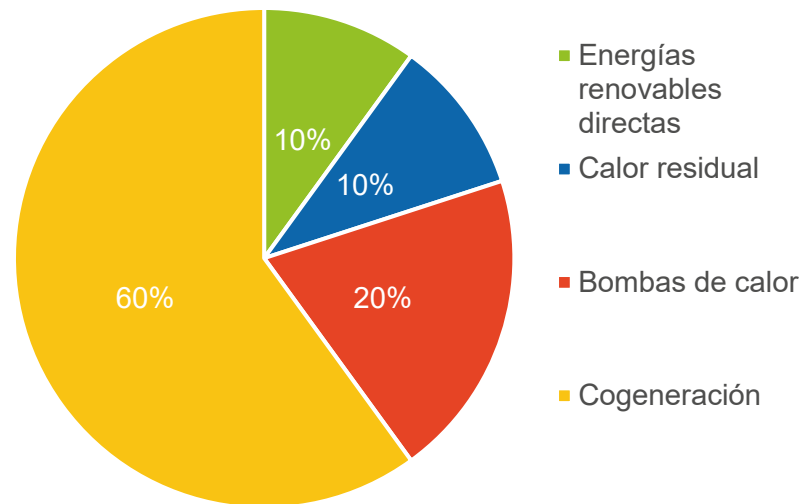
- El gobierno chileno fijó el ambicioso objetivo de conectar al menos a **500.000 usuarios a las redes de energía distrital para 2050.**
- Este objetivo busca contribuir a la descontaminación de las ciudades, reducir emisiones de CO2 y promover la eficiencia energética en el país.





Potencial total del país – Calefacción distrital

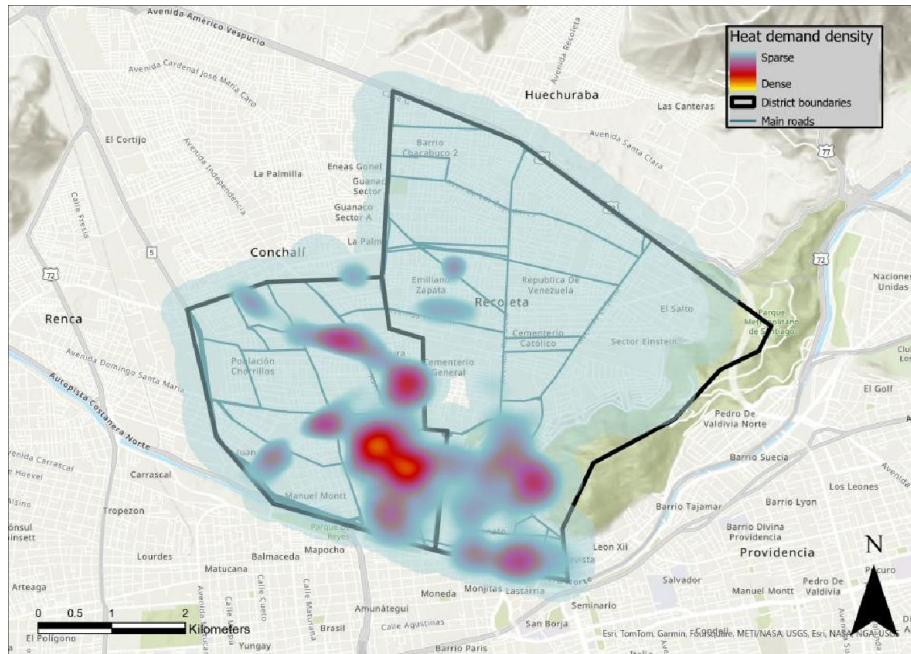
- En el sector energético, las energías renovables han alcanzado el 63% de la generación en 2023, pero existe el desafío de reducir el 70% en la emisión total de GEI.
- **Según el informe Heat Roadmap Chile 2019, la energía distritales tienen el potencial de abastecer el 40% del mercado de calefacción chileno, a través de diferentes fuentes de energía (ver la figura).**
- El enfriamiento distrital tiene un potencial de no estudiado, sin embargo se sabe que existe una necesidad de refrigeración creciente.



Source: *Heat Roadmap Chile, Aalborg University and UNEP, 2019*



Enfoque de planificación maestra



Para alcanzar el potencial nacional, se debe actuar a gran escala mediante la planificación maestra a nivel ciudad o conurbación.

La metodología de planificación consiste en:

1. Análisis de puntos calientes de demanda de calor

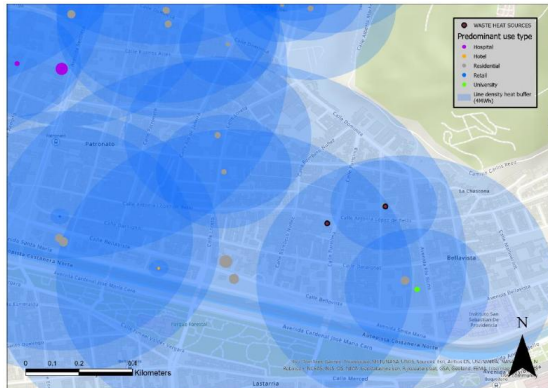
- Mapa de densidad de demanda de calor en toda la región de estudio.
- Un hotspot estadísticamente significativo tendrá una alta demanda de calor y estará muy cerca de otros edificios con alta demanda de calor.
- Identificación de cargas ancla



Enfoque de planificación maestra

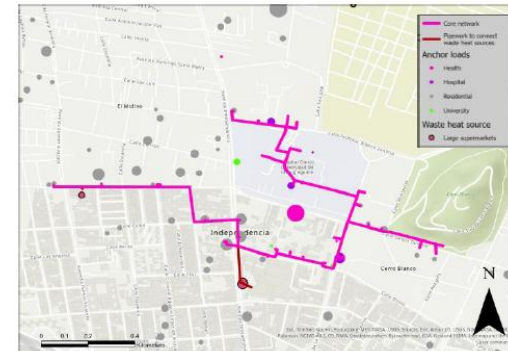
2. Identificación de fuentes energéticas:

- Fuentes de calor residual
- Proximidad a espacios verdes (para explorar la viabilidad de una bomba de calor geotérmica)
- Proximidad a una fuente de agua (para explorar la viabilidad de una bomba de calor hidráulica)

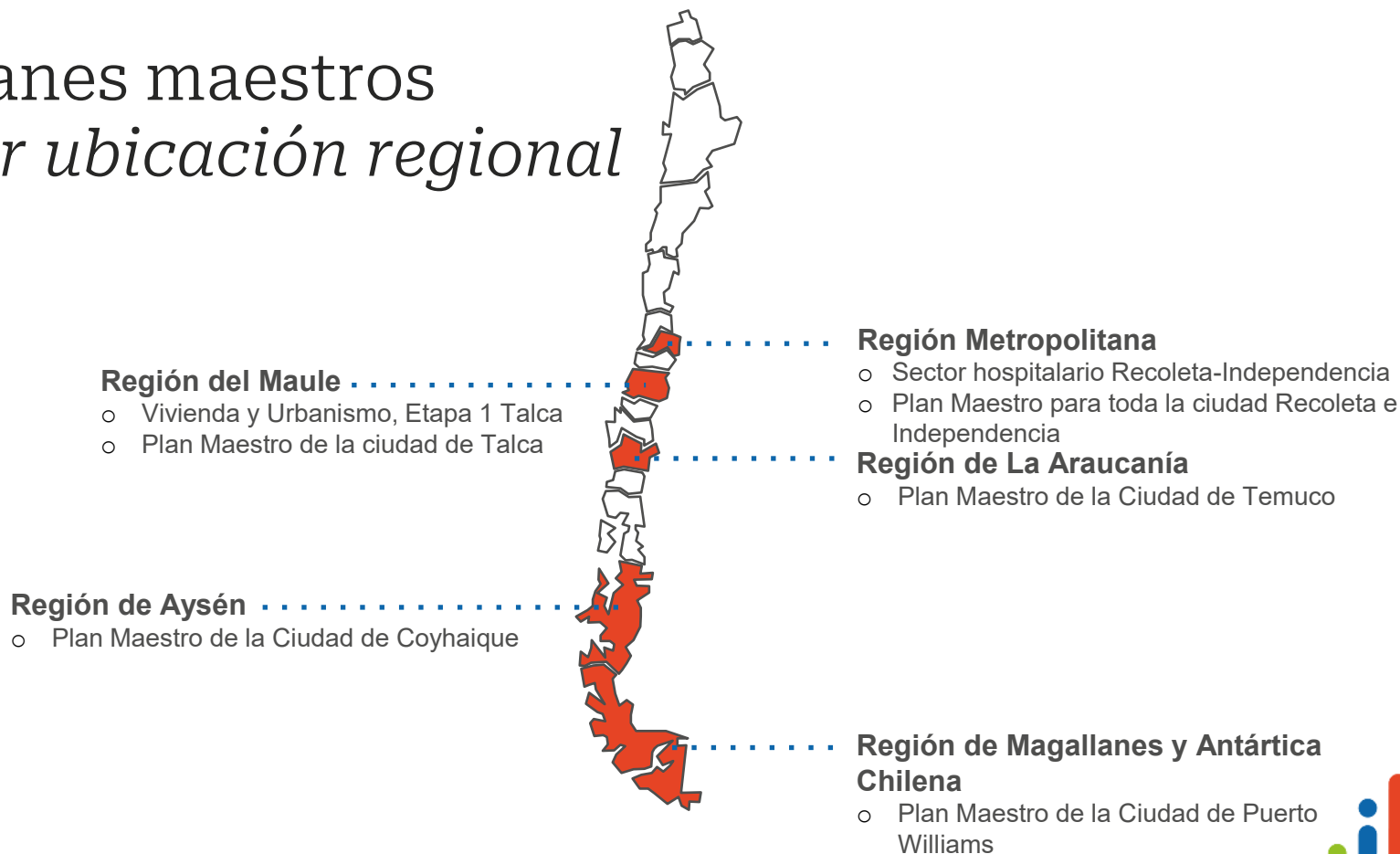


3. Trazado de límites y de redes:

- Ya sea utilizando un método de "densidad térmica lineal" o "densidad térmica espacial", se puede evaluar si una red es financieramente viable, mediante la comparación con umbrales ya estudiados.
- Luego se realiza el trazado de límites de las zonas de alto potencial
- Finalmente se diseñan las redes principales y secundarias



Planes maestros *por ubicación regional*



CITY-WIDE MASTER PLAN, RECOLETA & INDEPENDENCIA

Location: Santiago, Metropolitan Region



Objective

Deploy a district energy large-scale full scheme for Recoleta and Independencia cities.



Type of service

Heating, cooling, and domestic hot water (DHW)



Power

45 MW



District area

1,732,000 m²



Emission reduction

24,292 tCO_{2eq}/year



Description

It provides heating and hot water services for the cities of Recoleta and Independencia, to a variety of building types such as health, education, administrative, commercial, and residential. Four areas have been prioritized in the city to be implemented in different stages in the mid-term.



Building types

Commercial, public and residential



Development stage

- . Pre-feasibility studies
- . Investment roadmap



Investment

MUS\$ 156



CITY-WIDE MASTER PLAN, TALCA

Location: Talca, Maule Region



Objective

Implement a district energy large-scale full scheme for the city of Talca.



Type of service

Heating, cooling, and domestic hot water (DHW)



Building types

Commercial, public and residential



District area

813,000 m²



Emission reduction

5,019 tCO_{2eq}/year



Description

It provides heating and hot water services for the city of Talca, to a variety of building types such as health, education, and residential. Three areas have been prioritized in the city to be implemented in different stages in the mid-term.



Power

11 MW



Development stage

- . Pre-feasibility studies
- . Investment roadmap



Investment

MUS\$ 45



CITY-WIDE MASTER PLAN, TEMUCO

Location: Temuco, Araucanía Region



Objective

Deploy a district energy system for the city of Temuco, to achieve more sustainable development, and especially achieve a substantial reduction in particulate matter.



Type of service

Heating and domestic hot water (DHW)



Power

562 MW



District area

64,743,440 m²



Emission reduction

139,000 tCO_{2eq}/year



Description

It provides heating and hot water services for Temuco city, to several building types such as health, education, administrative, sports, commercial, industrial, hospitality, and residential. Energy is generated by biomass and natural gas boilers. Five areas are planned within the city, representing different phases of the full scheme.



Building types

Health, Education, Commercial, Administrative, Public, Office, Sport, Industry, Lodging, Residential



Development stage

Pre-feasibility study



Investment

MUS\$ 782



CITY-WIDE MASTER PLAN, COYHAIQUE

Location: Coyhaique, Aysén
Region



Objective

Implement a district energy large-scale full scheme in the entire city of Coyhaique.



Type of service

Heating and domestic hot water (DHW)



Power

215 MW



District area

7,797,430 m²



Emission reduction

18,684 tCO_{2eq}/year



Description

The proposed district energy system supplies heating and hot water to 90% of the thermal demand in the urban area of the city of Coyhaique. It includes consumers of the commercial and public sectors, as well as about 18,000 homes. The proposed technology takes advantage of the potential use of biomass in the area, allowing the associated market access a structured and guaranteed demand for biomass of 110,000 tons/year, which implies 274 jobs for the exploitation and processing of biomass. With the project, it is possible to reduce practically all particulate matter in the city, thus eliminating the air quality problems that place Coyhaique as one of the most polluted cities in Latin America.



Building types

Commercial, public and residential



Development stage

Pre-feasibility study



Investment

MUS\$ 149



CITY-WIDE MASTER PLAN, PUERTO WILLIAMS

Location: Puerto Williams, Magallanes Region



Objective

Deploy a district energy system in the entire city of Puerto Williams



Type of service

Heating and domestic hot water (DHW)



Power

7.4 MW



District area

525,805 m²



Emission reduction

1,924 tCO_{2eq}/year



Description

The proposed district energy system supplies heating and hot water to 80% of the energy demand in the urban area of Puerto Williams, the southernmost city in the world. It includes consumers from the commercial, public, and housing sectors. The proposed technology takes advantage of the potential use of biomass in the area, transitioning to gas and thermal storage. With the system, it is possible to reduce CO₂ emissions in the city by 97% and eliminate energy supply problems in winter seasons.



Building types

Public and residential



Development stage

Pre-feasibility study



Investment

MUS\$ 10





Potencial de Mediano plazo – Cartera de inversiones

En total, la cartera de proyectos de energía distrital involucra:



Potencia
853 MW



Área distrital
76,212,000 m²



Reducción de emisiones
193,000 t_{CO2eq}/año



Inversión
MUS\$1,176

** Números estimados en base a los 5 planes maestros, y a 16 proyectos de prefactibilidad de pequeña escala*