Designing and enabling framework for district energy in Chile

Celia Martinez, Technical Expert, District Energy in Cities Initiative, UN Environment
A city-wide mapping and energy master plan will help the city to:

- map pollution, waste heat, heat/energy-use (fuel type and consumption), building types, technologies used (individual woodstoves, community stoves with central heating, boilers)

- establish priority zones for DH development and develop zonal policies and define license areas

- Define a city-wide strategy developing scenarios of pollution growth and energy use and analyze which technology would deliver best results in terms of pollution/GHG reductions.
Unlocking investment by:

- Facilitating project development (e.g., through grants for feasibility studies and project commercialization). Grants could be refunded through a “relying fund”.

- Making priority buildings for DH efficient and ready for connection.

- Analyzing the risks of the different elements of a DH project (construction, load, cogeneration electricity revenues) and setting up a tailored made soft loan and/or guarantees programme to meet the returns on investment expected by each investor type.
A sustainable policy framework would allow to:

- Level the playing field against alternative technologies
- Promote renewable and efficient district energy that addresses air pollution and fuel poverty
- Pollution regulations
- Incentivize CHP plants (e.g. explore the possibility of FiT, tax incentives)
- Protect individual consumers from volatile new fuel prices
- Definition of rights-of-way for DH networks
- Delegate authority to municipalities to enable them define franchise zones/license areas
- Regulate the sale of heat (standard contracts, customer protection, tariff structures)
- Strengthen ongoing national initiatives on improving the local biomass supply changes
Panel 1: Tackling air pollution and addressing the needs of the residential sector

Panel 2: What financial instruments would help kick-start the first district energy networks?

Panel 3: How to encourage the development of CHP plants within the Chilean electricity market?
DISTRICT ENERGY IN CITIES
A GLOBAL INITIATIVE TO UNLOCK THE POTENTIAL OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

Chile GCF Concept Development
FINANCIAL INSTRUMENTS FOR DH INVESTMENT

Policy objectives
- Manage urban air pollution
- Deliver low cost heating
- Energy efficiency

By promoting:
- Investment in DH/ CHP with:
  - Renewable/ waste heat
  - energy efficient technology
  - lower heating costs

Energy source
- Waste heat
- Biomass
- Geothermal
  - etc

Heat sales
- Connection subsidies
- Heat take off guarantees
- Area concession/ bidding
- VAT (renewable, energy efficiency target)

Consumer protection
- Heat tariffs
- Service standards/ licencing
- Demand side efficiency subsidies

Project development cost
- Pre-Feasibility studies
- Commercialisation

Project capital costs
- Feasibility/ commercialisation subsidy
- Capital programmes for desirable technologies
- Import subsidies

Operating costs
- Removing/ reducing carbon intense fuel subsidies

Electricity sales
- Electricity feed in tariffs
- Power purchase agreements
Chile District Heating Initiative

- DES Delivery (coordination) Unit at National Level
- Regulatory framework and devolvement of authority of DES for municipalities
- City Support and Master Energy Planning
- Alignment of the Sustainable Heating Programme
- Project Development Costs
- Project Capital Costs

- National Level
- DES Delivery Unit

- Grants

- City Support and Master Planning
  - Project Development Costs
  - Project Capital Costs
  - Grants Feasibility Commercialisation
  - Grants Connection Building Efficiency Guarantees
  - good DH examples (efficiency (CHP); renewable; cost effectiveness)

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- ✓ Regulatory Framework
  - Subsidy removal (level playing field)
  - Licencing
  - Electricity tariffs for CHP (FiT)
  - Tax incentives (VAT & import)
- ✓ Devolve City Level Authority for DES
- ✓ Alignment with SHP
Financial Instruments

- Grants
  - Feasibility
  - Commercialisation
  - Connection and building efficiency - low income groups/ESCO
  - Master planning zonal targeting
  - Building efficiency

- Loans
  - Capital programme for good DH examples (efficiency (CHP); renewable; cost effectiveness)

- Guarantees
  - Heat off take

- Tariffs
  - Stabilisation for heat pumps
  - Stabilization of wood chip prices

- Feed in Tariffs
  - Electricity sales back to grid

- Tax incentives
  - VAT for DH heat sales
  - VAT/ import tax for strategic equipment
**Financial Instruments for Investment**

- **Grants**
  - Regulatory Framework
  - Master planning zonal targeting
  - Feasibility
  - Commercialisation
  - Connection and building efficiency - low income groups/ESCO
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- **Loans**
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**Project Development Costs**
- National Level/DES Delivery Unit
- City Support and Master Planning
- Project Development Costs

**Project Capital Costs**
- Project Capital Costs

**Regulatory Framework**
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- Regulatory Framework
GCF Model

Arguing for Loans
**Example Categories**

- Building use and consumption patterns
- Building/ block density
- Heating technologies (existing and planned)
- Energy sources

**Example: Temuco Pre-feasibility work**

*A. High potential areas (3 to 4 year payback)*
- High density buildings/ blocks
- Central heating systems (for easy connection)

*B. Medium potential areas (payback period ?)*
- Lower density buildings
- Mixed heating technologies (central heating & woodstoves)

*C. Low potential areas*
- Low density
- Wood stoves
FINANCIAL MODELS

- Change in payback period
- Change emissions per capita

Key

- High potential areas
- Medium potential areas
- Low potential areas