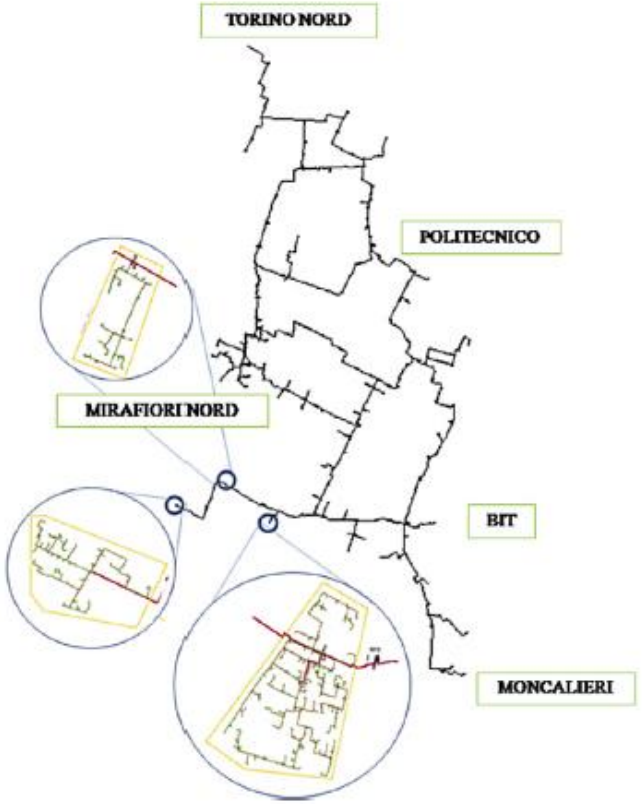
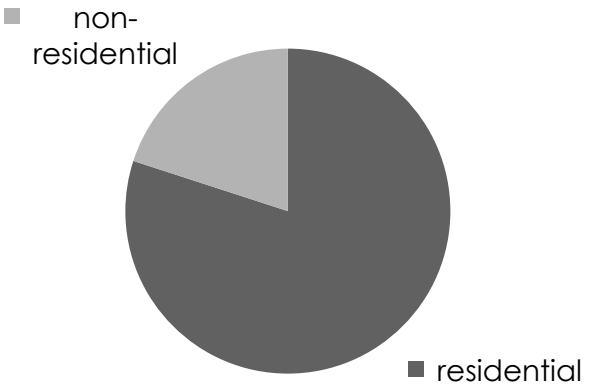
Turin, Piedmont

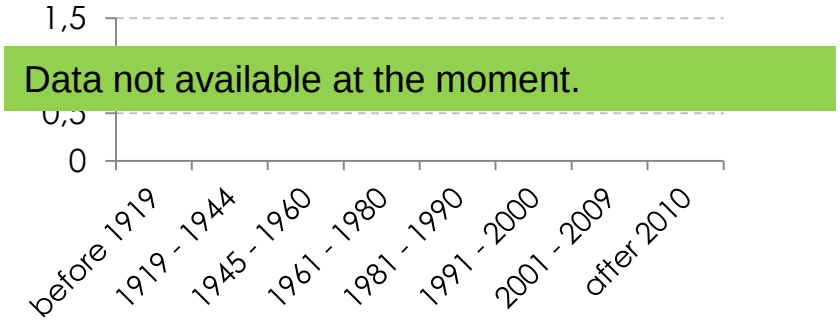


- **no. of ~~buildings~~ users: 570.000 inhabitants**
- **total heated ~~floor area~~ volume: 54 millions of m³**

- **building typology:**



- **years of construction:**



Data not available at the moment.

- **renovation measures already carried out: renovation in progress**
- **implementation period: 1982 - nowadays**

Turin, Piedmont

Overall aim and objective

The Nord Turin project allows a significant containment of emissions into the atmosphere, thanks to the progressive elimination of hundreds of condominium boilers, and allows to obtain a reduction in emissions of 134 tons per year of nitrogen oxides, 400 tons per year of sulfur oxides and 17 tons of harmful powders.

In terms of energy, an annual saving of 95,000 toe (Equivalent Tons of Oil) is achieved, in addition to the 180,000 toe years already saved thanks to the Moncalieri cogeneration plant.

The Nord Turin cogeneration system with a capacity of 400 MW of electricity and 220 MW of thermal power can serve a further volume of 15 million cubic meters and is powered exclusively by natural gas. The most important environmental benefit regards potential impact, in terms of improving the air quality in the urban area, following the expansion of district heating services. It should be noted that the construction of the system in the project allows a reduction in the concentration levels of the pollutants resulting in a consequent improvement in air quality.

Involved stakeholders

The IREN Group operates in the energy and heat generation business area through 12 hydroeletric plants and 8 thermoeletric plants operating in cogeneration mode. In Turin, the transport and distribution networks of heat are managed by AES Torino. Other stakeholders are the Piedmont Region and the Municipality of Turin due to benefit in terms of energy policy management, energy reduction and emissions reduction, also the local community in terms of general wellbeing.

Turin, Piedmont

- **What kind of renovation measures were/are being carried out?**
  - ☐ renovation of the thermal envelope
  - ☐ renovation of the existing heating systems (decentralized in buildings)
  - ☐ new central district heating
  - ✖ modification of the existing district heating (from 1982)
- **heating demand before renovation: << MWh/a >>**

Data not available at the moment

- **heating demand after renovation: 2,046,000 MWh/a**
- **cooling demand existing: no (x % of heating demand)**

- **energy supply system(s) before the renovation:**
  - ☐ heat pump
  - ✖ natural gas
  - ☐ oil
  - ☐ biomass
  - ☐ district heating
    - ☐ renewables
    - ☐ fossil
    - ☐ mix
  - ☐ other….
- **renewable energy generation before the renovation:**
  - ✖ none
  - ☐ PV
  - ☐ solar thermal
  - ☐ other….

- **energy supply system(s) after the renovation:**
  - ☐ heat pump
  - ☐ natural gas
  - ☐ oil
  - ☐ biomass
  - ✖ district heating
    - ☐ renewables
    - ☐ fossil
    - ☐ mix
  - ☐ other….
- **renewable energy generation after the renovation:**
  - ✖ none
  - ☐ PV
  - ☐ solar thermal
  - ☐ other….

Turin, Piedmont

Why is this intervention worth studying? / Why should it be part of the Case Studies?

The Torino Nord cogeneration system, which has a combined-cycle group of about 400 MW and three integration and reserve steam generators, with a total thermal capacity of 340 MW, is equipped with a modern control room, equipped with the most modern technological solutions available in the sector. Located on the first floor of the main building there is a main console and a back-up with 24 hours operation. The combined cycle fueled by gas is the most efficient and eco-compatible technology available today, offering considerable advantages over traditional ones through a high efficiency (55-58%), a reduced environmental impact and thanks to the use of natural gas instead and a lower cost of energy produced. The installation of heat storages optimize the efficiency of the district heating system, reducing the heat that backup boilers have to produce in the peak demand and increasing CHP generation. In this way, primary energy savings are obtained.

The plant is composed of the following production groups:

- n ° 1 Combined cycle thermoelectric group in cogeneration structure;
- n ° 3 integration boilers and district heating reserve;
- n ° 1 Auxiliary boiler.

further information:

http://www.rinnovabili.it/energia/cogenerazione/torino-capitale-italiana-del-teleriscaldamento6158/

http://www.irenenergia.it/ChiSiamo/Attivita/Teleriscaldamento/