

How to implement the potential of DHC ?

Focus on Italy

*Upgrade DH Final Workshop
September 15th, 2021*





AIRU – Associazione Italiana per il Riscaldamento Urbano

AIRU

- No profit organization
- Founded in 1982
- Mission: promotion of DHC and dissemination of innovation, renewables and energy efficiency culture.

AIRU members

- Utilities
- Industrial companies
- Universities
- Municipalities
- AIRU is joined with  UTILITALIA
imprese acqua ambiente energia





DHC in Italy today

KEY FIGURES

More than **400** networks (> 4500 Km)

3 big cities: Torino, Milano, Brescia

367 Mm³ heated volumes

1.360.000 «equivalent» flats

3% of the total heat demand

9.300 GWh_t distributed heat

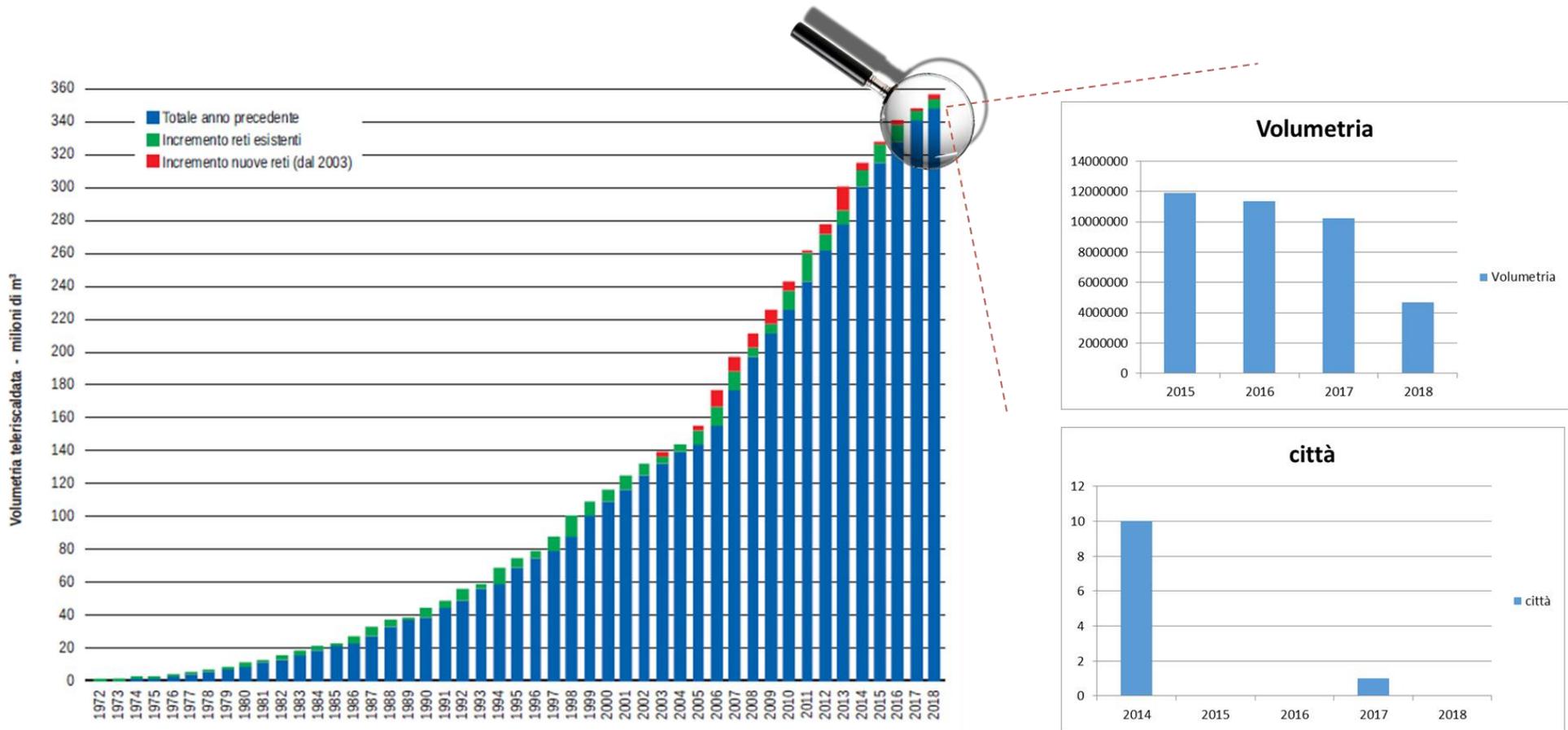
6.000 GWh_e cogenerated electricity

- 1.700.000 ton_{CO2}/year





DHC growth, a reason of concern



Growth of Italian DHC since 1972 (heated volumes)



Recent legislative developments penalize DHC

2014

Official analysis by GSE largely underestimate (+45%) the potential of growth of DHC in Italy.

Measures to support Efficient DHC development, even foreseen by law, are not implemented

2015

The **White Certificate Mechanism**, a proven effective way to support DHC projects, was modified and today it is no longer useful to support DHC developments.

2017

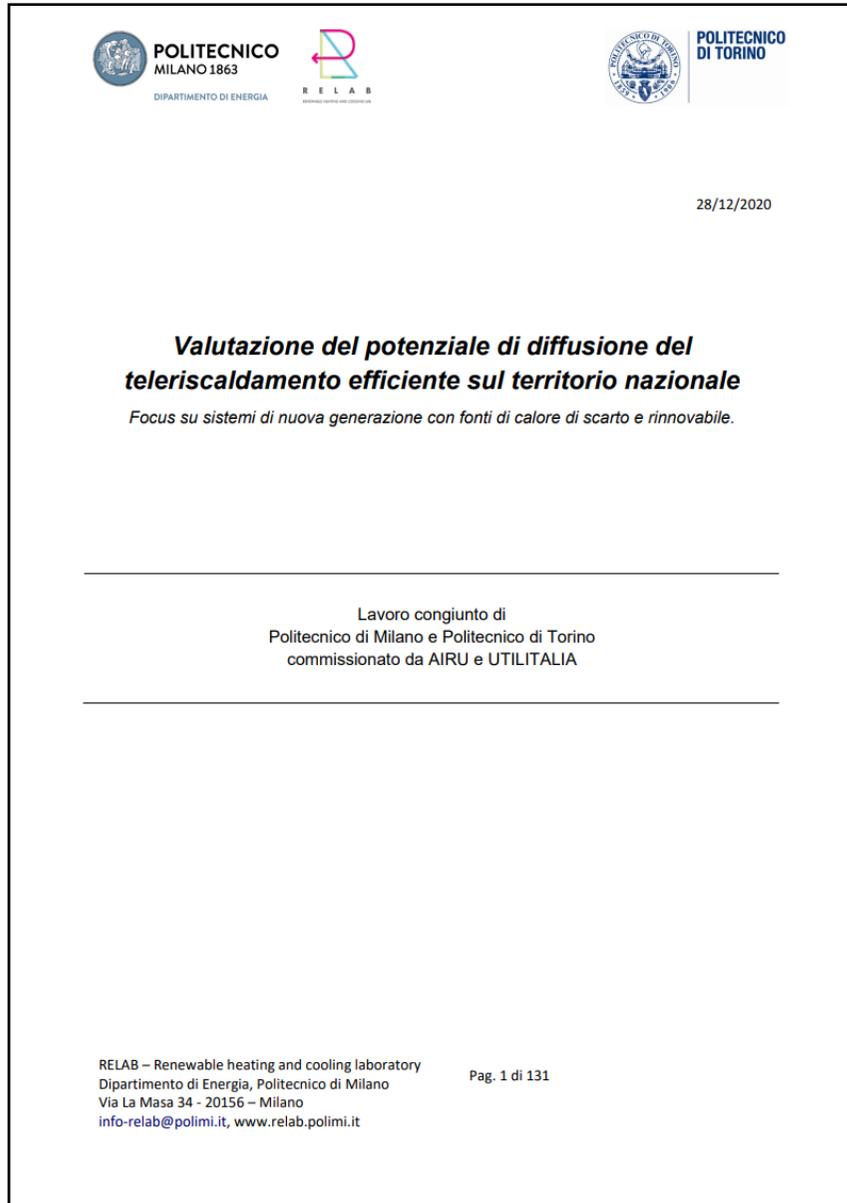
A new law (law 172/2017) establish to reintroduce White Certificates for CHP projects combined to DHC network extension: this law it is **not implemented so far**.

2020

The so-called «Raise Decree» introduces the **Superbonus** mechanism for building retrofitting (energy efficiency). DHC is not included in Superbonus (with the exception of some mountain area). Superbonus includes fossile-only devices (like gas condensing boilers)



Is still there a future for DHC in Italy ?



 **POLITECNICO MILANO 1863**
DIPARTIMENTO DI ENERGIA

 **RELAB**
RENEWABLE HEATING AND COOLING LABORATORY

 **POLITECNICO DI TORINO**

28/12/2020

Valutazione del potenziale di diffusione del teleriscaldamento efficiente sul territorio nazionale
Focus su sistemi di nuova generazione con fonti di calore di scarto e rinnovabile.

Lavoro congiunto di
Politecnico di Milano e Politecnico di Torino
commissionato da AIRU e UTILITALIA

RELAB – Renewable heating and cooling laboratory
Dipartimento di Energia, Politecnico di Milano
Via La Masa 34 - 20156 – Milano
info-relab@polimi.it, www.relab.polimi.it

Pag. 1 di 131

AIRU and **UTILITALIA** jointly promoted a study to assess the growth potential of DHC.

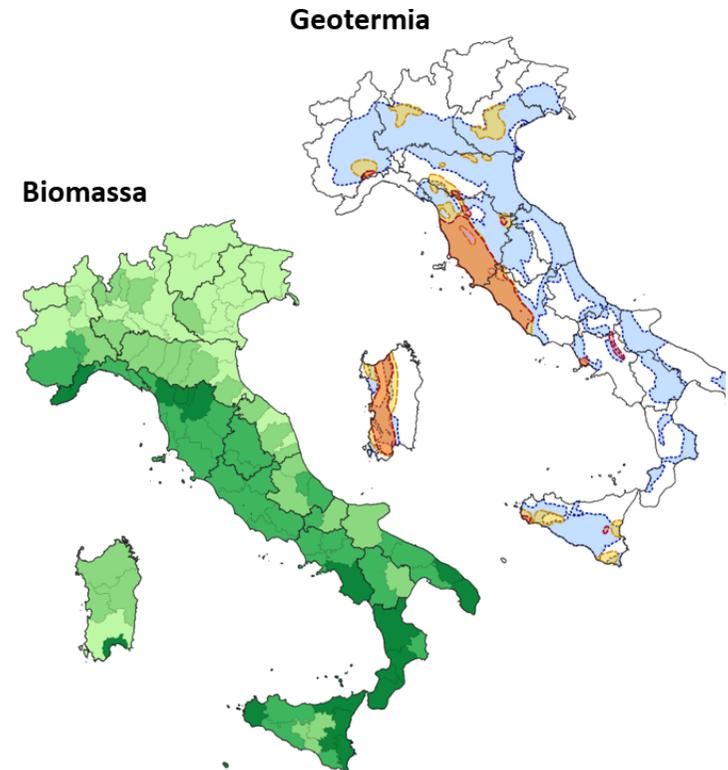
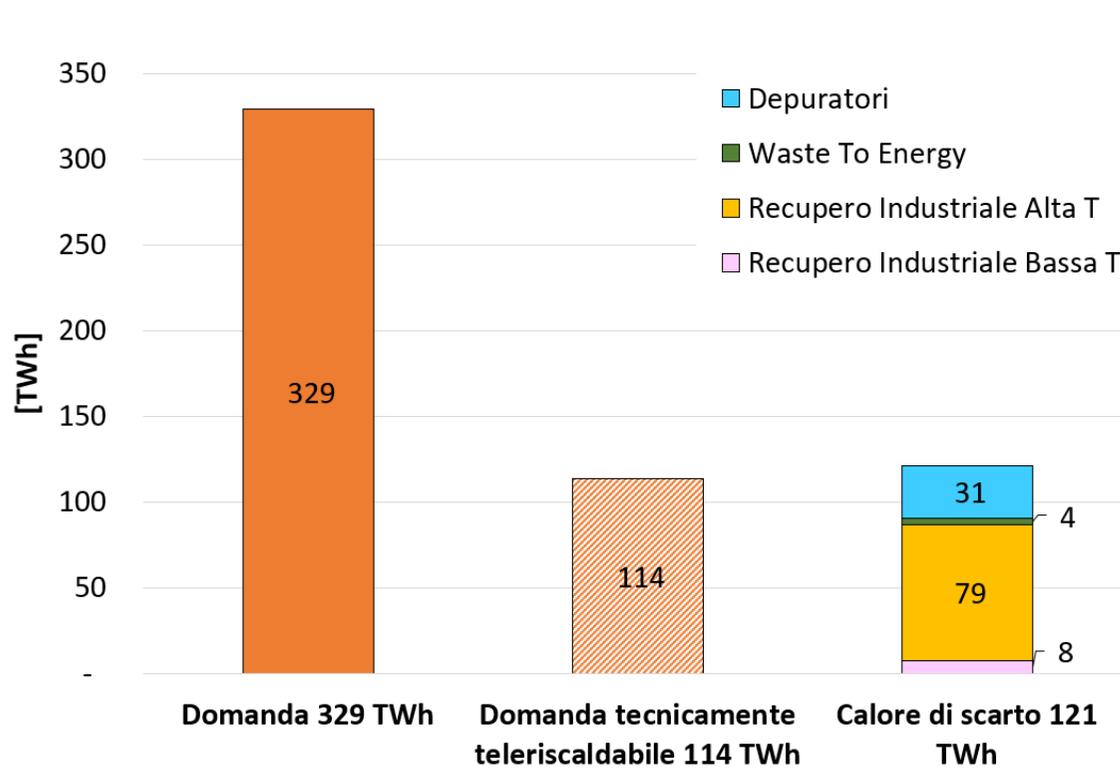
The focus is on **last generations** systems, **waste heat** recovery and **renewable heat**.

The study was jointly issued by **Politecnico of Milan** and **Politecnico of Turin**, two of the most important technical universities in Italy, whose scientific independency is unanimously recognized.

The results of the study were presented during the Upgrade DH workshop on October 2020.



1 - Calculation of the heat demand and of the available RH & WH



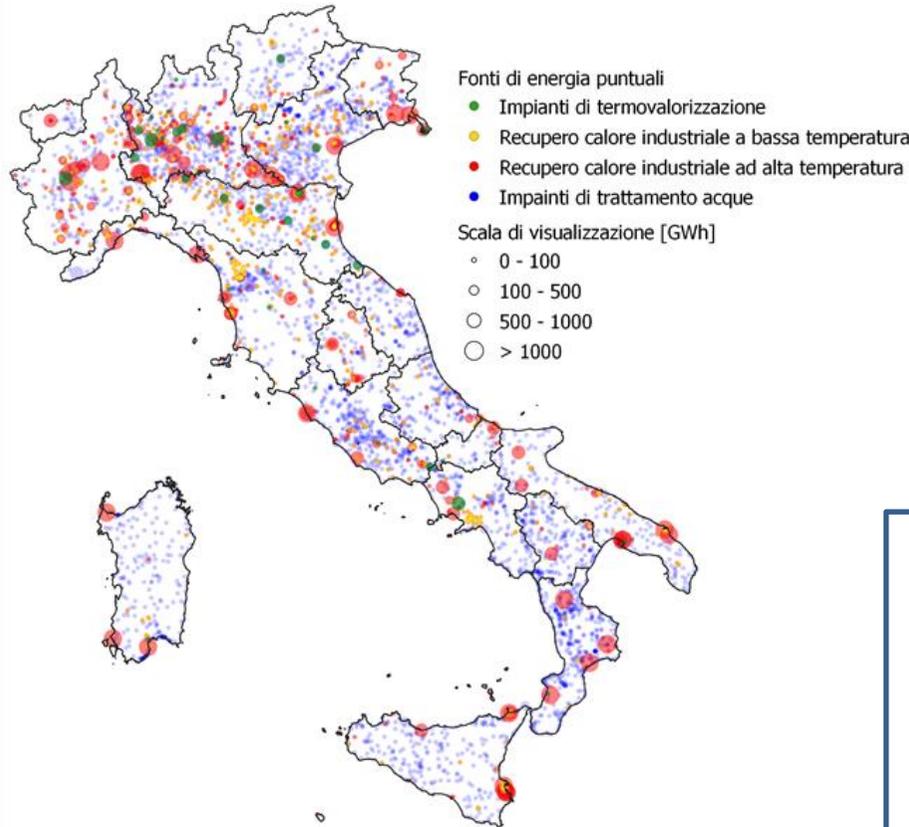
CALORE DI SCARTO

RINNOVABILI

- The total Italian heat demand amounts to 329 TWh: 34% of it (**114 TWh**) could be technically satisfied by DHC.
- The Waste Heat availability amounts to **121 TWh**



2 – Crossing heat demand and heat availability

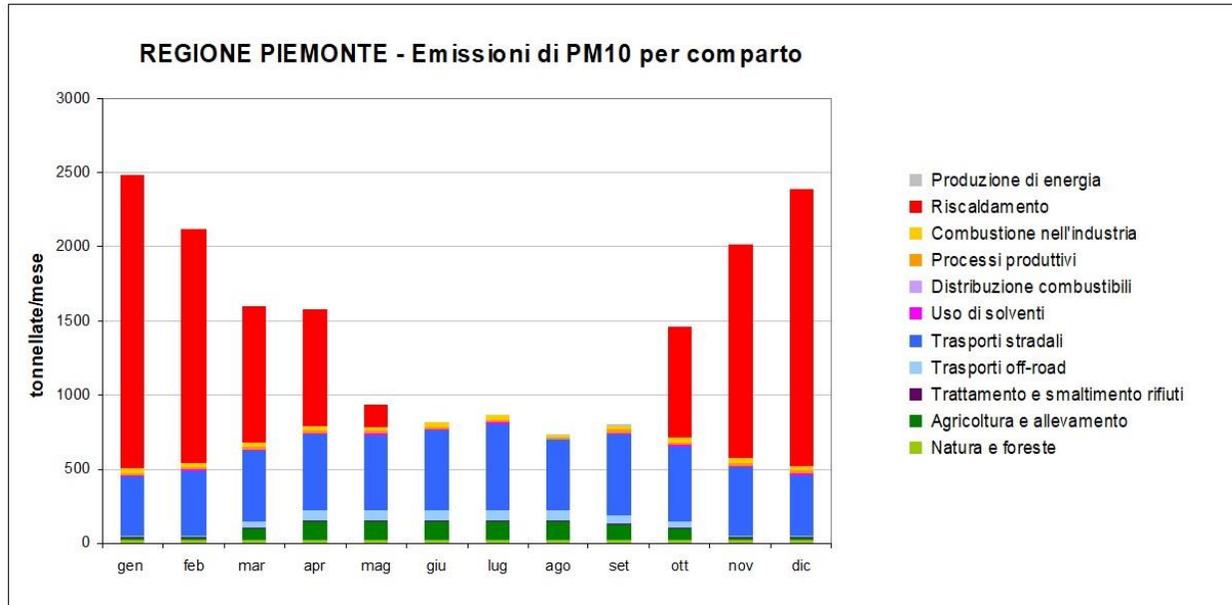


- ✓ Using an innovative methodology, with an extremely high geographical granularity, the study crosses the heat demand with the waste and RES heat available on the field.
- ✓ The model estimates all the related costs (transport, distribution, generation, pumping, etc) and calculates the **potential** in the minimum cost scenario.

- ✓ Potential: **38 TWh** potenziale (+420%)
- ✓ **Avoided CO2 emissions: 5,7 Mton/year**
- ✓ Reduction of dust pollution equivalent to the shut down of more than **4.000.000 cars.**

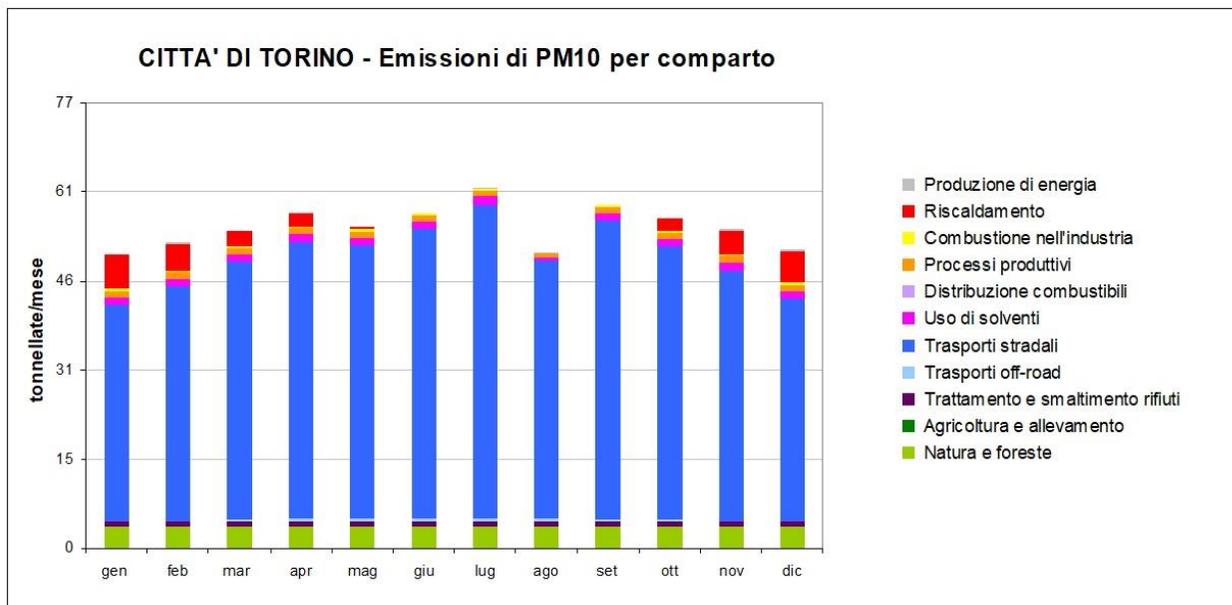


Data from the field confirms the model



The data from **ARPA** (the public authority for pollution control) shows that dust pollution from heating systems in the city of Turin during winter time is largely lower than in the rest of Piemonte region.

This is the positive effect of the presence of a large DHC system widely spreaded in the whole urban area of Turin.



NOTIZIE ARPA



31 gennaio 2019



What does we need to make potential real ?

❑ The National Recovery and Resilience Plan



- **6 Tasks:** innovation, green transition, health, infrastructures, school, social equity
- **DHC** crosses many of them
- The Recovery Plan provides **200 M€** for **DHC projects**
- The definition of the selection criteria is ongoing

Good, but not enough



What does we need to make potential real?



DHC is a capital intensive sector: huge investments are needed to implement the systems.

Investors need:

- **Consistent rules:** rules must be consistent with the stated goals of decarbonization, energy efficiency, better use of the resources: inconsistent rules (i.e Superbonus mechanism) produce market distortions.
- **Stable rules:** investments payback times are long, so the rules must be maintained in the long term and some support scheme should be implemented.
- **Planning:** DHC must be included in a stable way in all the planning instruments at National and Local level.



AIRU Next steps

- AIRU has issued to Government and GSE (the National Agency for Energy Efficiency) a proposal of support scheme for efficient DHC, based on a new application of White Certificate mechanism. Follow up action with policy makers ongoing.
- AIRU is developing a new study that, starting from Politecnico's results, will address on National basis:
 - Benefits related to DHC growth
 - Role of DHC in National energy strategy
 - Regulatory barriers
 - Proposal to overcome the barriers
- The result of this new study will be presented in the first quarter of 2022 in a national event (organization ongoing) to celebrate 40 years from AIRU foundation.