



# IMPULSE

# IMPACT

More Renewable Energy Sources (RES)  
in the District Heating  
and Cooling (DHC) sector



[www.res-dhc.eu](http://www.res-dhc.eu)



**RES DHC**

Renewable Energy Sources for  
District Heating and Cooling



Biogas



Power 2 Heat



Solar thermal



Biomass



Waste heat



Geothermal



Heat pump



Heat storage



## Renewable Energy Sources for District Heating and Cooling

# MAKING THE CHANGE ●

**The transformation of district heating to renewable heat generation is essential and always starts on the ground. In this process, heat suppliers and municipalities complement each other optimally to provide a sustainable heat supply.**

In mitigating climate change, piped heat supply in combination with locally available renewable heat sources plays an essential role. Together, local heat suppliers and community stakeholders are actively doing their part. The transformation of district heating towards the use of 100 % renewable energies offers numerous advantages. In addition to independence from fossil energy imports, local value creation increases, local air quality is improved, and significant efficiency improvements also take place at the technical level.

The first step is to take a close look at all locally available renewable heat sources. In parallel, the heat losses of the existing

heat network have to be minimized and the necessary heat network temperatures have to be reduced. An important aspect for renewable energies are (large) heat storages which compensate possible seasonal and diurnal fluctuations.

Modern and innovative technical solutions already exist for the transformation process. Now the actors are faced with the big challenge to take a sustainable and renewable path. Under the current political and social conditions, this is a challenging but also solvable task. With the right tools, inspiration and competent partners, the transformation of heating networks will succeed.

# AHEAD WITH CLIMAPOPOSITIVE PROJECTS



## 1 Tübingen

Urban heat transition with urban climate protection program until 2030.



## 4 Solothurn

Waste heat recovery, river water heat and expandable district heating for the production of heat and cold.



## 2 Freiburg

- Urban heat transition with municipal heat master plan.
- Waste heat utilization in combination with other renewable energies and expansion of the heating network.



## 5 Genf

Heat pump uses Lake Geneva for renewable heat generation.



## 3 Riehen

Geothermal energy generates renewable heat and feeds into district heating.



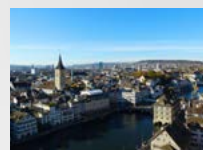
## 6 Annecy

Heat pump and use of lake water for sustainable and renewable heat supply.



## 7 Solar Energy Village Randegg

Solar thermal combined with biomass generates renewable heat for a heating network and a beverage producer.



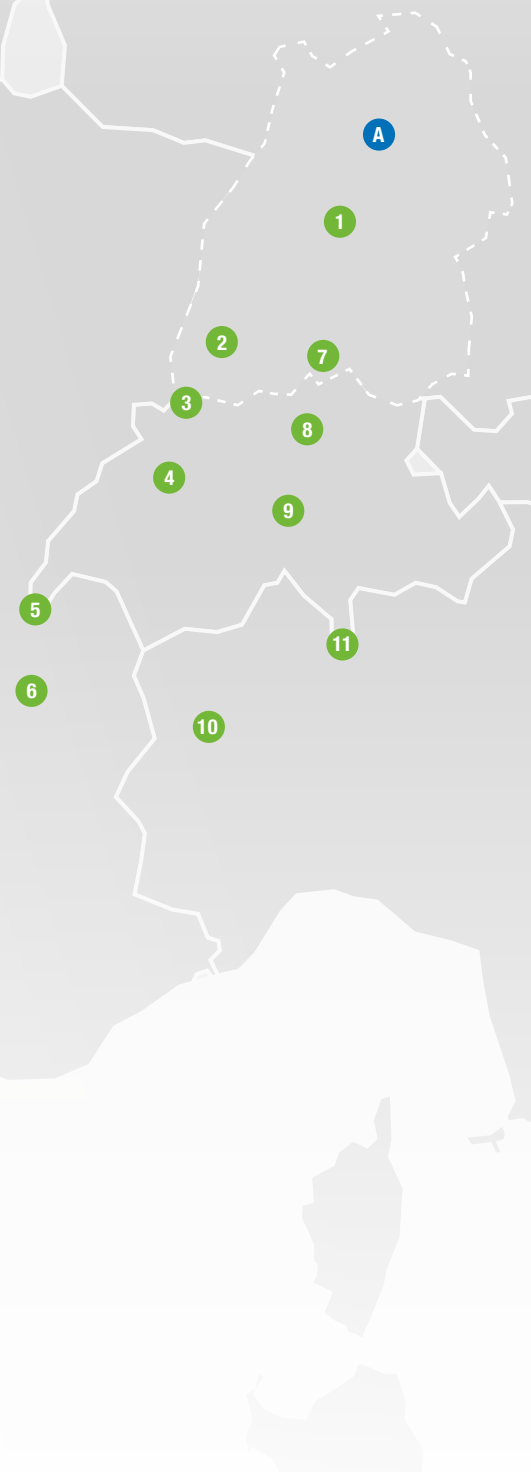
## 8 Zurich

Urban heat transition with municipal heat planning.



## 9 Ausserschwyz

Establishment and expansion of a renewable heating network with wood and biogas.



12

B



### 12 Łasztownia Island and ectogrid

An innovative energy balancing system that utilizes waste heat from industry and minimizes reliance on the grid.



### 10 Solar thermal integration Turin

Solar thermal and heat storage in Mirafiori Nord area of district heating network in Turin.



### 13 Graz

- Urban heat transition with energy plan and local working group on heat supply 2020/2030.
- Waste heat utilization of a steel plant with a heat pump and feeding into district heating.
- Implementation of a storage tank next to the waste heat utilization of a steel plant.



### 11 Viganello-Lugano

Heat pumps use waste heat from the Swiss National Computing Center for heating and cooling.

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### A Baden-Württemberg

Regulatory framework through innovative climate protection law at state level.

### B Poland

Regulatory framework due to EON's decision to phase out coal by 2027.



### European Union

Regulatory framework through strengthening of REDIII.



## VIDEOS AND DOCUMENTATION –

Find out more about the projects on [www.res-dhc.com](http://www.res-dhc.com)



## WORKING GROUP “HEAT SUPPLY GRAZ”

Since 2013, the working group “Heat Supply Graz 2030/2040” has been working on the realignment of the “district heating supply mix” for the area of Graz. The core working team consists of the main regional actors Energie Steiermark Wärme, Energie Graz, Holding Graz and Province of Styria under the direction of

the Graz Environment Department and supported by Grazer Energy Agency. Success factors are the regular exchange of experiences in the core work team, the openness towards new ideas, the common goals and the open communication to the public. Find out more: [Graz\\_Statusbericht\\_2022.pdf](#)

Foto © Iren

### Solar thermal and heat storage in Mirafiori Nord area of DH network in Turin

A sustainable heat storage system is installed at the former Mirafiori Nord plant in Turin, Italy. It connects to the Group Iren-owned metropolitan DH network with 750 km length of double pipes. This system cuts CO<sub>2</sub> emissions by 8000 tons yearly. It includes a 411 kW solar thermal system, a 45 kW rooftop photovoltaic system, three thermal energy storage tanks with a total volume of 2,500 m<sup>3</sup> and a pumping station for heat supply to the district heating network.



Foto © Iren

### Energy planning: road to zero emissions

The City of Zurich's ambition is to achieve zero net emissions by 2040. Energy planning assesses future needs and the supply of renewable energy and determines the desired development over a 15-year period. One of the central tasks is the spatial coordination of the supply of thermal networks.

### Web seminar: Spatial planning as a tool for heat transition

Solar thermal projects in Germany face limited space for implementation due to existing land allocation for agriculture and industry. The Hamburg Institut initiated a web seminar in September 2022, supported by Plattform Erneuerbare Energien Baden-Württemberg and Städtetag Baden-Württemberg. The goal was to inform municipalities on spatial analysis for identifying suitable areas for renewable heating plants and seasonal storage systems. The seminar had nearly 100 participants from various stakeholders, and presentations can be found in German at the link provided.

[www.erneuerbare-bw.de/de/termine/veranstaltungen/vortraege#c1332](http://www.erneuerbare-bw.de/de/termine/veranstaltungen/vortraege#c1332)

**“ District heating is the perfect container to accommodate the renewable energy sources available at local level and make them available for creating more sustainable cities. ”**

Lorenzo Spadoni, President of AIRU, the Italian District Heating Association

**“ The lowering of network temperatures makes it possible to recover renewable heat at a low thermal level without a temperature monitoring system. ”**

Didier FROMONT, Dalkia (France)

**“ At the SEC Group, we know that sustainable and green energy is the only solution for the industry. The current energy crisis has reinforced this conviction and shown the importance of being independent on fossil fuels. ”**

Ryszard Sola, President of the Board, SEC Region (Poland)

## THE RIGHT TOOLS TO BRING YOUR PROJECT FORWARD!

**You would like to decarbonise your heating network, but don't know exactly how?  
Or perhaps you already have a few concrete ideas?  
Then you will certainly find a suitable tool that will help you!**

To develop and implement policies for RES DHC, cities, regions and utilities can also benefit of a set of tools, often available for free, covering different fields: Energy planning, design of RES plants, potential assessment methodologies, etc.

**The RES-DHC project collected several of these tools  
in a comprehensive toolbox, available at:**



[www.res-dhc.com/en/know-how/toolbox](http://www.res-dhc.com/en/know-how/toolbox)

## Benefit from a strong international network

### The project RES-DHC – Transformation of existing district heating and cooling to higher shares of renewable energy sources



RES-DHC stands for a wider introduction of Renewable Energy Sources (RES) in the District Heating and Cooling (DHC) sector. The RES-DHC project addresses the manifold market uptake challenges related to the transformation of DHC systems to higher shares of RES.

The main objective of the RES-DHC project is to support the transformation of existing urban DHC systems to RES in six participating regions and thereby to derive – from these practical cases – technical and organizational solutions for such transformation processes.

#### Get in touch with us.

On our internet portal, you will find useful information and tools for implementing RES in DHC. Showcase projects give you examples to derive inspiration for your own tasks.

#### Look at

 [www.res-dhc.eu](http://www.res-dhc.eu)  
 [linkedin.com/showcase/res-dhc-project](https://www.linkedin.com/showcase/res-dhc-project)

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#### With support of the RES-DHC project partners



#### IMPRESSUM

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 952873. The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the views by the institutions of the European Union. Neither the European Commission nor the authors are responsible for any use that may be made of the information contained therein.