Major findings & outputs from EU-funded DH projects

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The project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement n° 767799 - COOL DH - H2020-EE-2016-2017/H2020-EE-2017-RIA-IA

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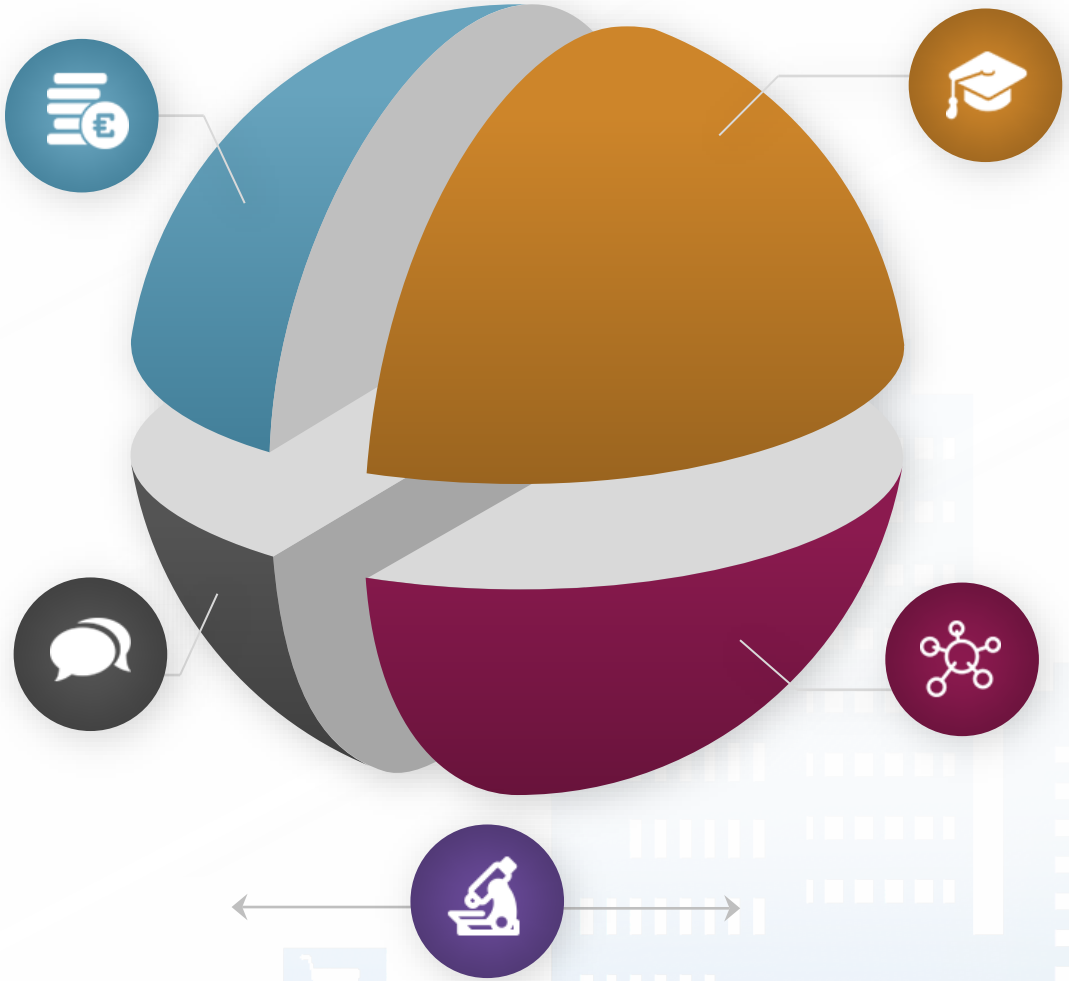
DHC+ Platform

Access to funding and Network

- Foster participation and matchmaking of our members in EU projects

Advocacy and Communication

- Set priorities for DHC technology development & funding in Europe



Knowledge Transfer

- Be the key portal to access district energy related resources

Replication & Scale up

- Accelerate the development and replication of sustainable district energy on the ground

EU Projects - cross cutting

DHC+ current project portfolio

DigiBUILD

BUILDINGS

DIGITALISATION

R-ACES

ENERGY COOPERATION

LOW TEMPERATURE

COOL DH

COOL DISTRICT HEATING

REUSEHEAT

FINANCIAL UPSCALE

WASTE HEAT

COOLING

RENEWABLES

WASTE HEAT

LOW TEMPERATURE

CITIES

celsius

smart cities

REWARDHeat

SMART SYSTEMS

DEMAND RESPONSE

CITIZENS & PROSUMERS

STORAGE

RENEWABLES

FINANCIAL UPSCALE

INDUSTRY HEATING

SPIRIT

INCREASE THE SYNERGY AMONG DIFFERENT ENERGY NETWORKS

SENERGY NETS

SYSTEMS INTEGRATION

CITIZENS & PROSUMERS

RES DHC

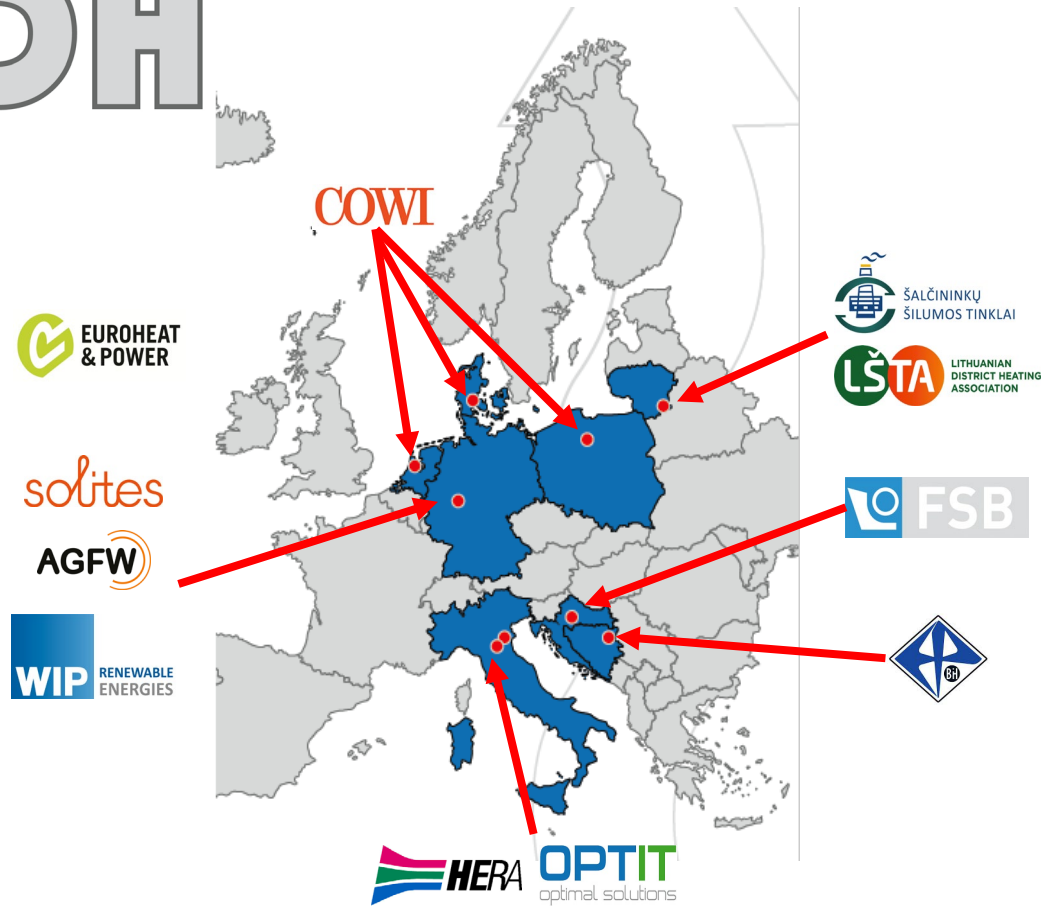
RENEWABLES

POLICY SUPPORT

RHC Renewable Heating & Cooling

European Technology and Innovation Platform

upgrade DH



- Initiated the DH **upgrading process** for 8 systems (Generation, Distribution, Use)
- Produced **Best Practices and Tools** Handbook
- Developed national action plans for DHN **retrofitting**
- Fostered **replication** of the proposed solutions across Europe

Improving existing DH networks in Europe

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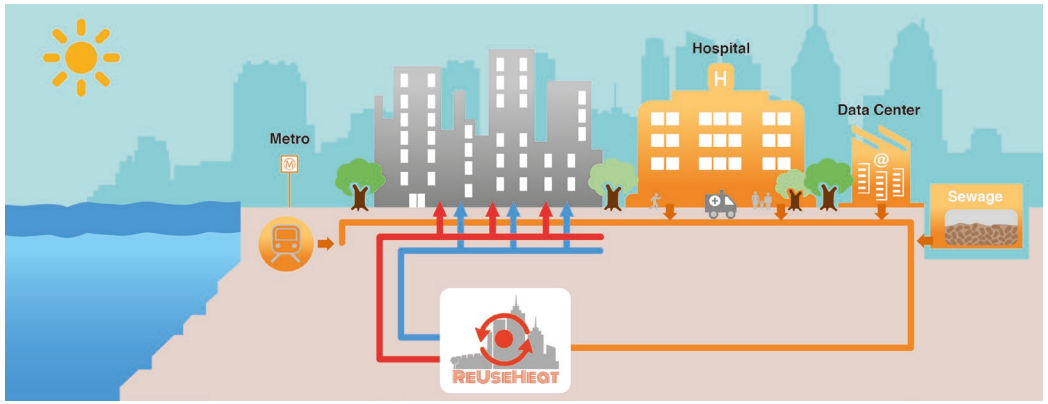
Urban waste heat recovery into existing DH networks



- **Urban waste heat recovery potential** assessed at **1.41 EJ**, it can meet **10%** of EUs heating and cooling demand
- Necessary **stakeholders** to realize the opportunity identified
- **Barriers** and **risks** to urban waste heat recovery analysed → the ReUseHeat suggestion: a **credit facility** for urban waste heat
- A **tool to compare the costs** of different heat supply options from the perspective of the household owner developed → **Low-temperature DH is cost-competitive!**

The technology is based on heat pumps boosting the temperatures to desired levels:

1. Datacenter in Braunschweig (20-25°C to 65°C)
2. Hospital in Madrid (20-35°C to 55°C)
3. Metro in Berlin (8-15°C to 50°C)

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TEMPO

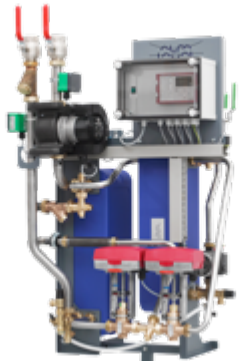
The TEMPO Comprehensive Solution Package

- Technological innovations on network & building side
- Consumer empowerment enabled by digital solutions
- Innovative business model for EU replication

TEMPO Demo sites

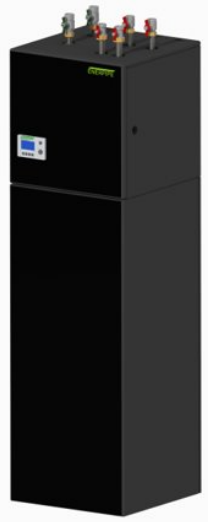
Existing urban DH network
Brescia - IT

- Smart DH controller reduces peak load
- Return temperature reduction



New rural DH network
Windsbach - DE

- Low return temperatures <40°C
- Useful for low- & medium-temperature networks (60-95°C) usable with renewable heat sources
- Functional, compact, pre-assembled individual buffer unit



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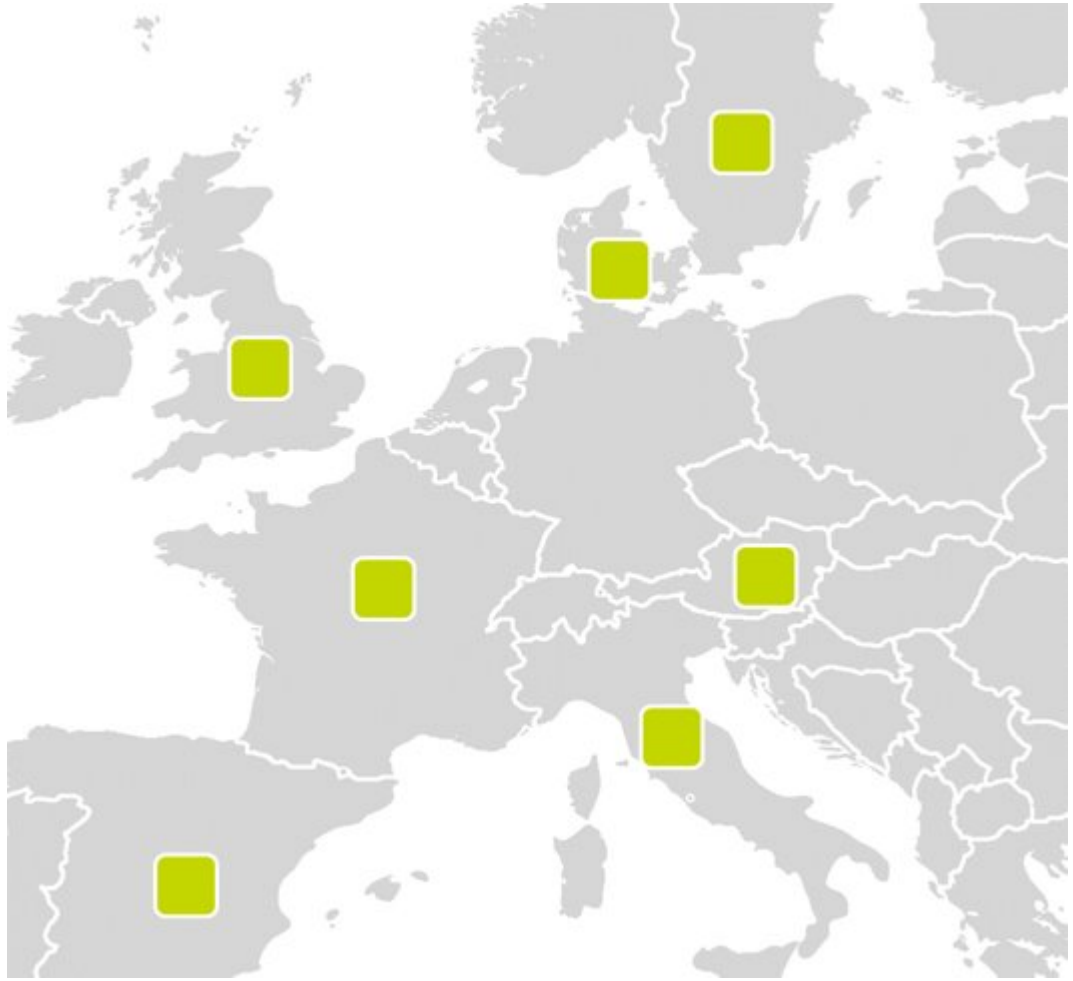
Magnitude

Policy recommendations:

- Aggregration of Multi-Energy Systems enables participation to energy markets
- Need for harmonisation of EU electricity markets
- New frameworks needed for collaboration between different actors
- Business models to promote energy integration



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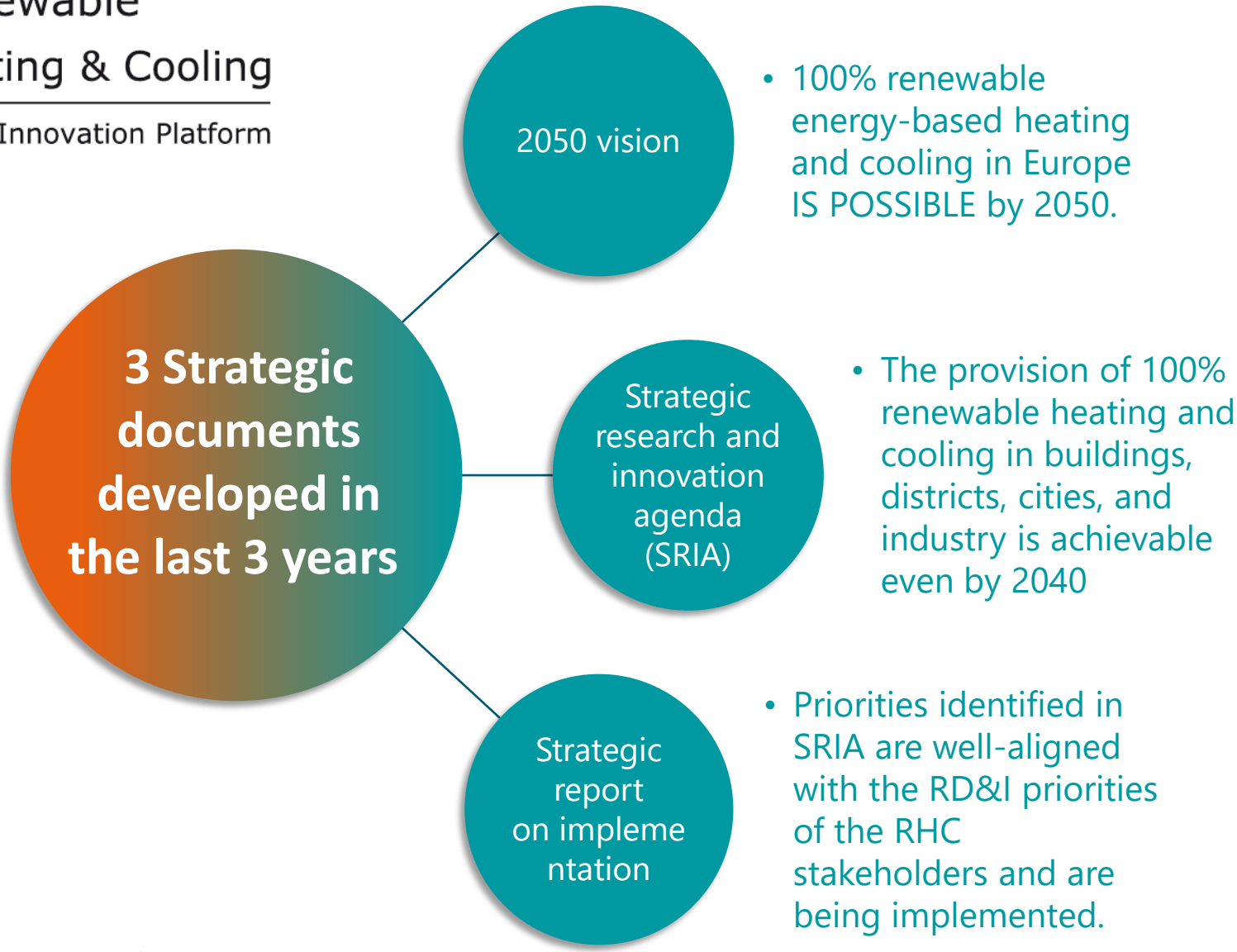
Renewable Heating & Cooling

European Technology and Innovation Platform



- 100% renewable energy-based heating and cooling in Europe IS POSSIBLE by 2050.
- The provision of 100% renewable heating and cooling in buildings, districts, cities, and industry is achievable even by 2040
- Priorities identified in SRIA are well-aligned with the RD&I priorities of the RHC stakeholders and are being implemented.

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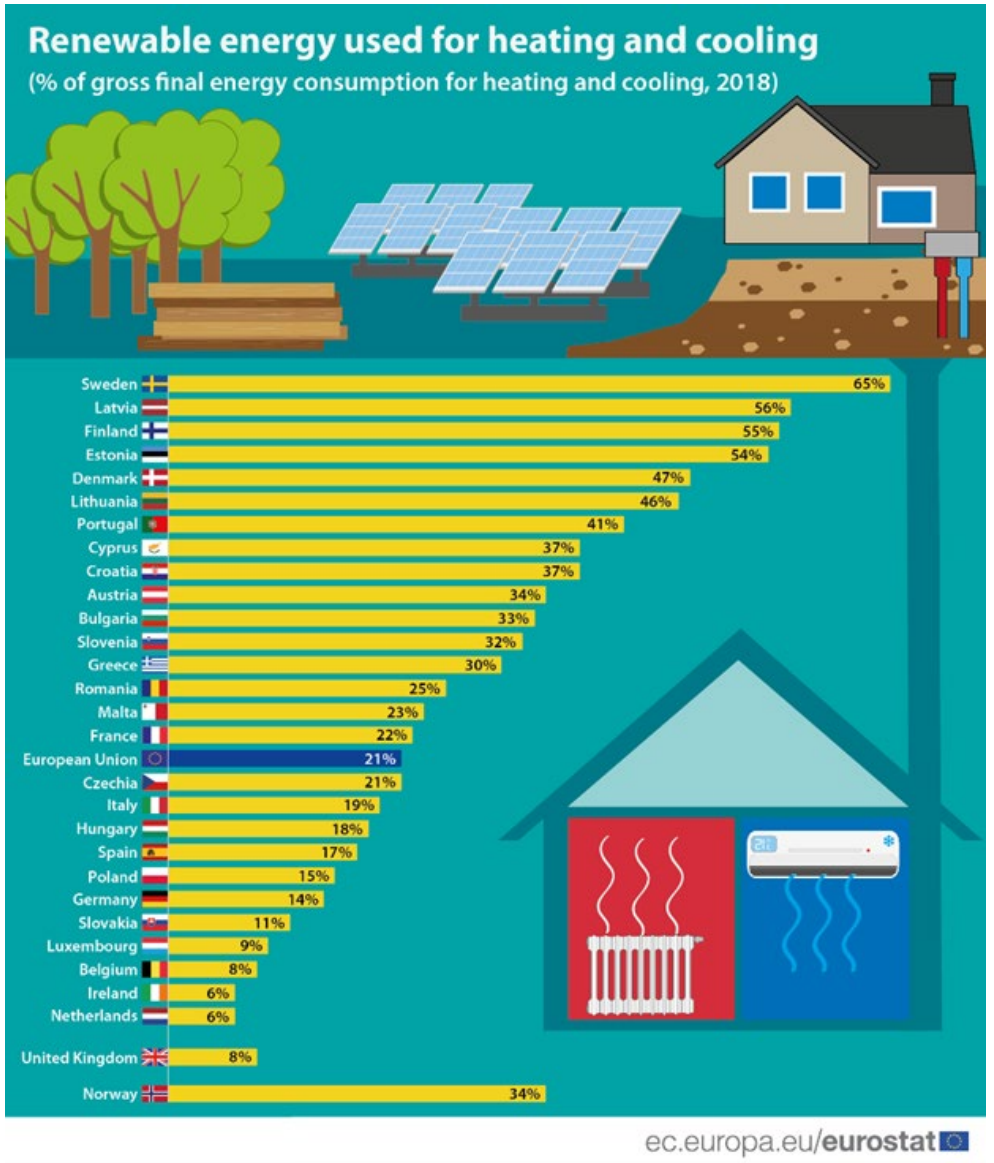
RES DHC

- Toolbox
  - useful tools and guidelines on the topic of decarbonizing DHC
- EU level survey - The Status and Potential of DHC in Europe
  - 60 million EU citizens served by DH
  - DH could meet 50% OF eu HEAT DEMAND BY 2050
  - Policies, funding, high potential countries



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REWARDHeat

REWARDHeat Scenarios

- 7 countries
- 3 Heat supply scenarios
- 3 climate policy options

Policy paper

- relevant H&C aspects of fit-for-55 package (RED, EED, EU ETS)

Serious Game

- Increase public awareness, understanding and acceptance of DHC

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celsius

a demand-driven collaboration hub

- ✓ **Celsius Toolbox** assembles information on innovative and efficient solutions that have been tried and tested by public and private projects
- ✓ Through the **Celsius Forerunner Groups** key actors in cities can exchange openly with their peers and supporting experts
- ✓ Gathers the opinions and challenges expressed by cities (e.g. in a **City Manifesto for Fossil-Free Heating and Cooling** or **Celsius Stakeholder Survey**) giving them a joint and stronger voice

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R-ACES
Energy Cooperation Platform

The R-ACES project creates ecoregions where multiple stakeholders engage in energy cooperation by

- exchanging heat/cold streams,
- investing in renewable energy solutions,
- managing energy streams with the use of the R-ACES toolbox.

The **self-assessment tool** to gauge the level of maturity at the start.

The **legal decision support tool** to help drawing up contracts that need to be signed between participants.

The **energy management platform** is the key to running, settling, and optimising the energy exchanges between companies.

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Major findings 1/2

- **Retrofitting**: through the modernization of sub-optimal district energy systems, significant impact in terms of energy efficiency, increase in renewables and CO2 emissions reduction, can be achieved (see Upgrade DH)
- **Urban waste heat**: the potential is large (10% of H&C demand), but the awareness is low; business and financing models are not mature (see ReUseHeat and REWARDHeat)
- **Low-temperature DHC**: is a cost-competitive heating solution (see ReUseHeat LCOH comparison tool, TEMPO), which offers cost advantages throughout the distribution chain from heat supply to heat consumption
- **Digitalisation**: Digital Innovation is emerging as one of the key enablers for progress and modernisation in the Heating & Cooling sector and consumer empowerment (see TEMPO); RoI from digitalisation measures is the shortest (see Upgrade DH)

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Major findings 2/2

- **Renewables:** The provision of 100% renewable energy-based heating and cooling (100%RHC) in buildings, districts, cities, and industrial processes in Europe is achievable by 2040 (see RHC-ETIP SRIA); district heating and cooling is a major enabler for integrating RES in H&C (see RES-DHC)
- **Energy system integration**: innovative market designs are proposed to increase the synergies between electricity, gas, heat/cooling networks (see Magnitude)
- **Ecoregions and Cities**: are key for the energy transition and can be supported through action-oriented tools (see R-ACES) and demand-based knowledge sharing (see Celsius Initiative)

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Thank you for your attention!

DHC+ TECHNOLOGY PLATFORM

Under the umbrella of

EUROHEAT & POWER

Find out more:

www.dhcplus.eu

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