

RHC-ETIP “100% RE Districts”

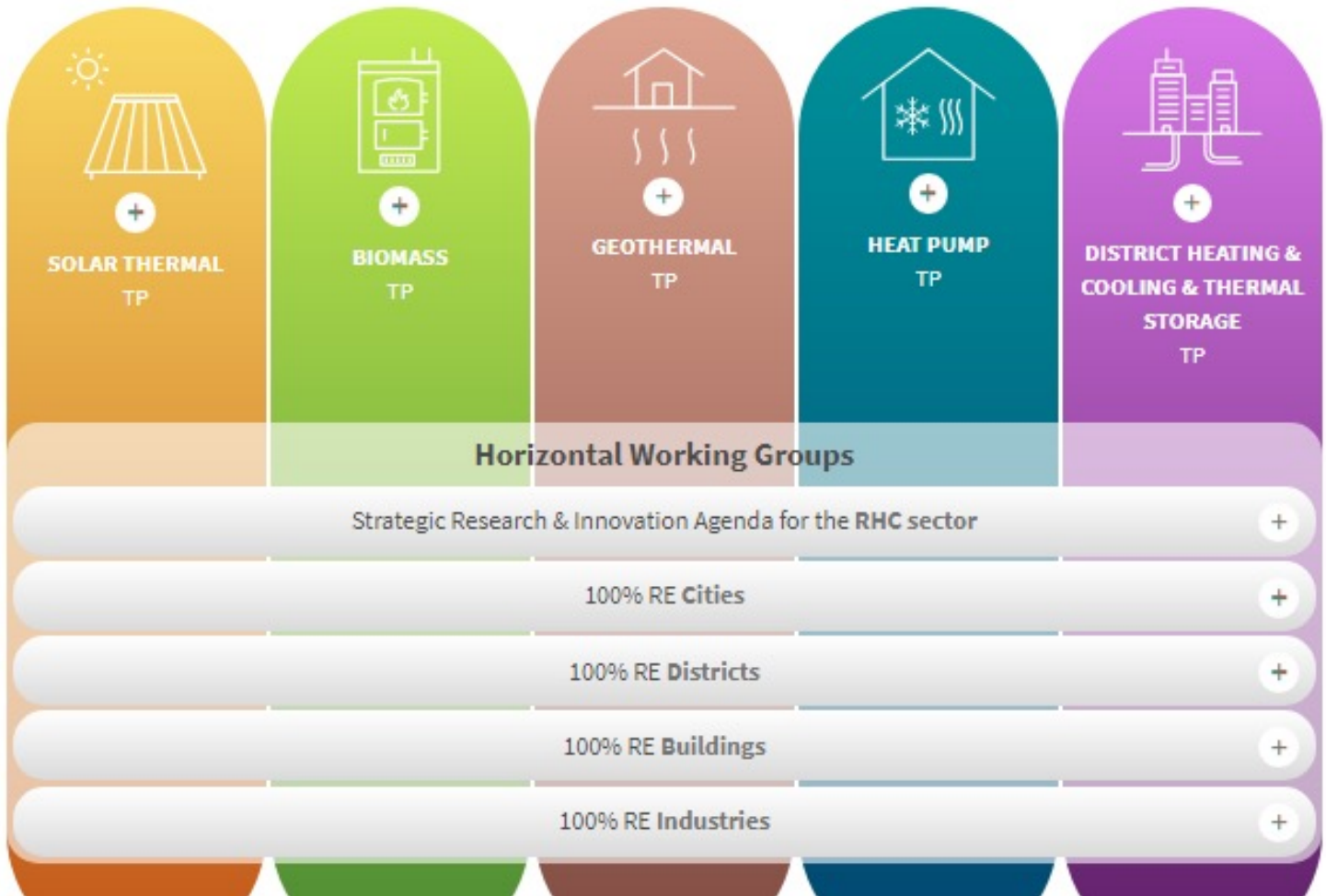


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100% RE
DISTRICTS
Horizontal Working Group



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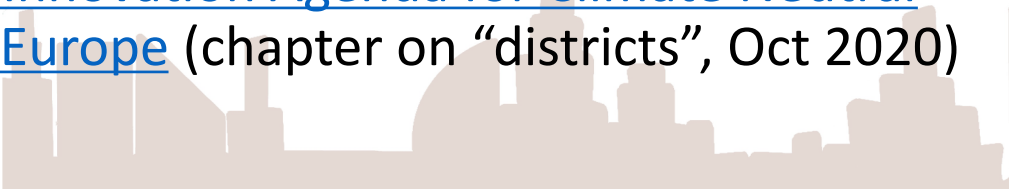


- Works to decarbonize heating & cooling in urban districts
- 40 members meet regularly
- Challenges: building renovation rate, space to harvest/store RE, diverse ownership structures
- Opportunities: dense populations, RES DHC, municipal building ownership, hybrid solutions

- Topics

- New DHC systems (+refurbishment of existing)
- Urban heat/cold sources
- Individual solutions for urban use
- Policy developments
- Toolboxes and stakeholder support

- Publications

- [100% Renewable Energy Districts: 2050 Vision](#) (Aug 2019)
 - [Positive Energy Districts Booklet](#) (Feb 2020)
 - [Strategic Research & Innovation Agenda for Climate Neutral Heating & Cooling in Europe](#) (chapter on “districts”, Oct 2020)
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- A silhouette of a city skyline with various building shapes, located at the bottom right of the slide.

- 2nd edition
 - First in 2013, was technology-focused
- Cross cutting barriers
- Challenges from the demand-side perspective
- Aims to influence member states



- Underlines the importance of the heating and cooling sector for the successful transformation of our energy system toward climate-neutrality
- Based on the 2050 Vision for 100% RHC, updates previous SRIA
- Highlights the benefits of replacing non-RES fuels with climate neutral RHC technologies
- Identifies the technological gaps and describes the R&I priorities needed to unlock the RHC potential serving as input for future HE calls
- Stimulates strong uptake of RHC technologies, market pull



The provision of **100% renewable** energy-based heating and cooling (100%RHC) in buildings, districts, cities, and industrial processes in Europe is **achievable even by 2040**.

- €2 billion annual investment is needed
- RHC technologies are needed to achieve carbon-neutrality. Electrification is too costly
 - 50% industry
 - 25% Member States
 - 25% EC
- Rapidly growing cooling demand needs to be addressed

- Thermal Energy Storage
 - Key enabler of RHC deployment and source of flexibility
- Policy and Social Innovation
 - Phase out FF and attract investors to RHC
- Digitalisation, operation and system flexibility
 - Needed at all levels for large scale adoption
- Innovative Financing Schemes and Business Models
 - Heat as a service, should benefit customer
- Circularity & Health



The DHC market

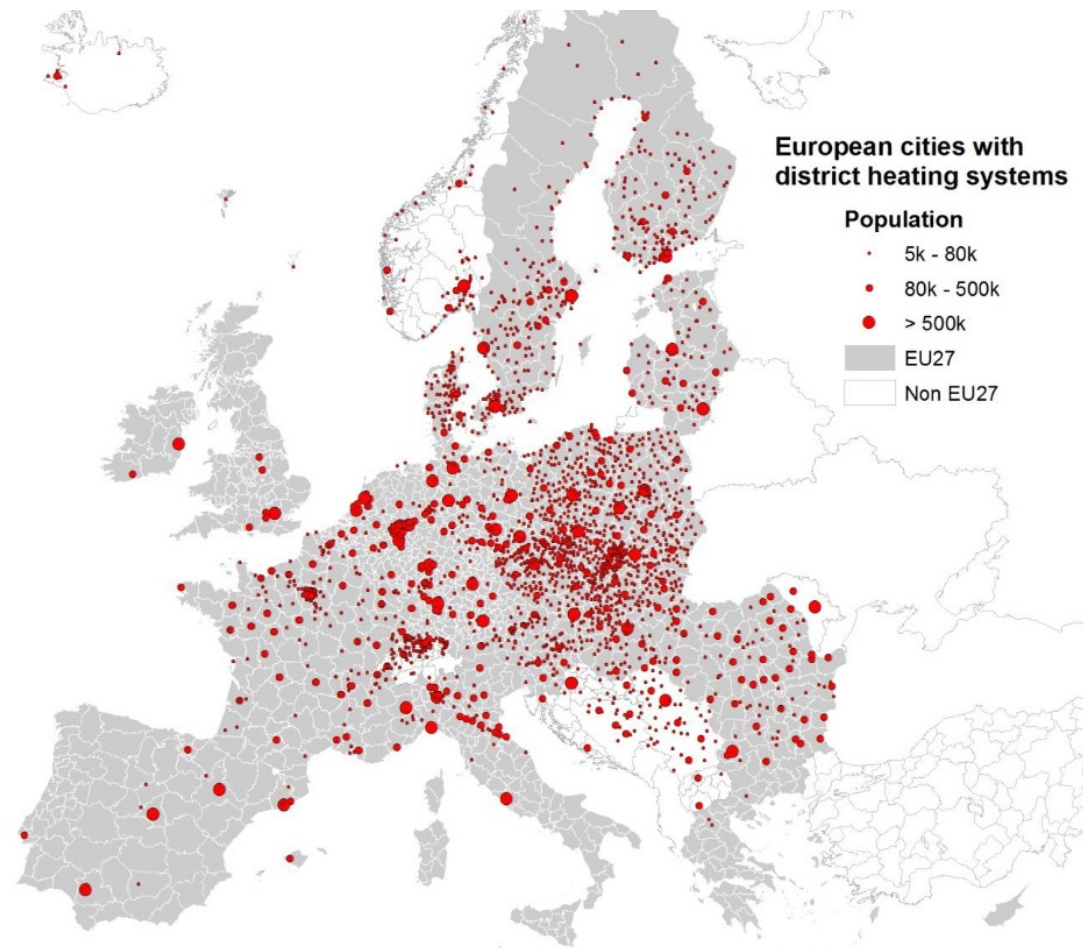
World: >80 000 DHC networks in operation

Europe: >6 000

(cities with >5.000 inhabitants)

- about 10% of the total heat delivery

The European district heating market has a value of around € 12 billion per year



SCOPE

Measures, technologies, strategies for lowering network temperatures to reduce heat losses while integrating renewables

AIM

Low temperature networks:

- Develop innovative and flexible concepts for low and ultra-low networks tailored to the local situation, considering prosumers and storage

Innovative substations:

- Develop concepts for new, innovative substations that increase flexibility and reduce network temperatures, including bi-directional supply

Return temperatures:

- Reduce return temps in a cost-effective and sustainable manner, and create business models to support these optimisations

Synergies with building refurbishment

Legionella research



SCOPE

Explore synergies between electricity, gas and heat/cooling networks

- DHC networks facilitate energy integration and enable storage options

AIM

Mainstream the concept of energy system integration

- Increase knowledge and cooperation between thermal and electric stakeholders
- Set up territorial goals, and integrated planning processes

Market conditions

- Address market / regulatory barriers (e.g. electricity tax, grid tariffs, incentives)
- Create local energy communities for heat for higher flexibility

Integrated planning and operational approaches

- Standardized data sharing between relevant stakeholders
 - Suitable monitoring to quantify flexibility
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- A silhouette of a city skyline with various buildings of different heights, located at the bottom right of the slide.



DECARBONISATION – SCENARIO EVALUATIONS AND DECARBONISATION STRATEGIES

SCOPE

- Technological pathways which are economically feasible and have a high supply security and user comfort
- Maximum integration of renewable sources (including waste heat) and heat cascading (circularity principle) essential

AIM

Regulatory sandboxes

- Test new regulations and market models (i.e. dynamic tariffs)

Development of technological scenarios / heat & cold supply strategies

- Considering the impact on the electricity market/grid
- Roadmap to reach these targets

Demonstration and exploitation

- Pilot cases - 100% emission free heat supply, maintaining user comfort and cost-competitiveness





Strategic research priorities of the DHC & TES Technology Panel

- Complements the SRIA
- Research Priorities
 - Waste Heat
 - District Cooling
 - Low Temperature District Heating and Cooling
 - Energy System Integration
 - Digitalisation
 - Thermal Energy Storage
- Includes implementation plan (budget, financing, KPIs)

 Renewable Heating & Cooling
European Technology and Innovation Platform



STRATEGIC RESEARCH
INNOVATION AGENDA
FOR DISTRICT HEATING &
COOLING AND THERMAL
ENERGY STORAGE
TECHNOLOGIES

- Strategic document: Deployment and Implementation Report
 - Monitor the implementation of the SRIA priorities
 - Outlines trends in deployment of RHC technologies – industrial R&D



100% RHC Event Online edition

28 October 2021



#100RHC



- Present the deployment and implementation report and address the future of RHC technologies
- Register via the [RHC website](#)





Thank You

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