RHC-ETIP “100% RE Districts”

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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)
• 2\textsuperscript{nd} edition
  • First in 2013, was technology-focused
• Cross cutting barriers
• Challenges from the demand-side perspective
• Aims to influence member states
...in a nutshell

• 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
Transversal Topics

• 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
ENERGY SYSTEM INTEGRATION

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
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)
Upcoming Activities

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

• Register via the RHC website
Thank You

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