



2050

**Heat Roadmap Europe**  
A low-carbon heating and cooling strategy

# Discussion on EED policy recommendations with national experts

## **EED CA, Bucharest**

**Carsten Rothballer, Coordinator, ICLEI Europe**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 695989.

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# Aspects of the Energy Efficiency Directive

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- **energy efficiency targets**
- **building renovation and the an exemplary role for public buildings**
- energy efficiency obligation schemes
- **energy audits and energy management systems**
- metering and billing information systems and the right to access this data
- **consumer information and empowerment**
- **promotion of efficiency in heating and cooling**
- **energy transformation, transmission, and distribution**
- availability of qualification, accreditation, and certification schemes
- **information and training**
- energy services
- **an energy efficiency national fund, financing, and technical support**



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# Specific (sub)sectoral targets and horizontal and vertical integration

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- EE and RE go hand-in-hand but need to have separate targets
- EE transition costs are lower and affordable if the energy system is optimised locally, regionally and across-boarders
- Horizontal integration of EE targets: Overall EE target should be translated (in NECAPs) into all sectors (electricity, heating and cooling, transport etc.) and their subsectors.
- Vertical integration of EE targets: throughout governmental levels
  - How can this approach be ensured by the EED or NECAP?
  - National modelling scenarios?



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# Accelerated and deeper renovation is feasible

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- On average 1.5% to 2% annual retrofit target and deeper renovation on average of approx. 80kWh/m<sup>2</sup> is economically feasible
- For the HC and the sub-sectors of space heating in buildings this means a contribution of at least 30% savings
- Energy audits and energy management systems
  - How can we go beyond a building?
  - How to ensure the understand the building as part of the local context?



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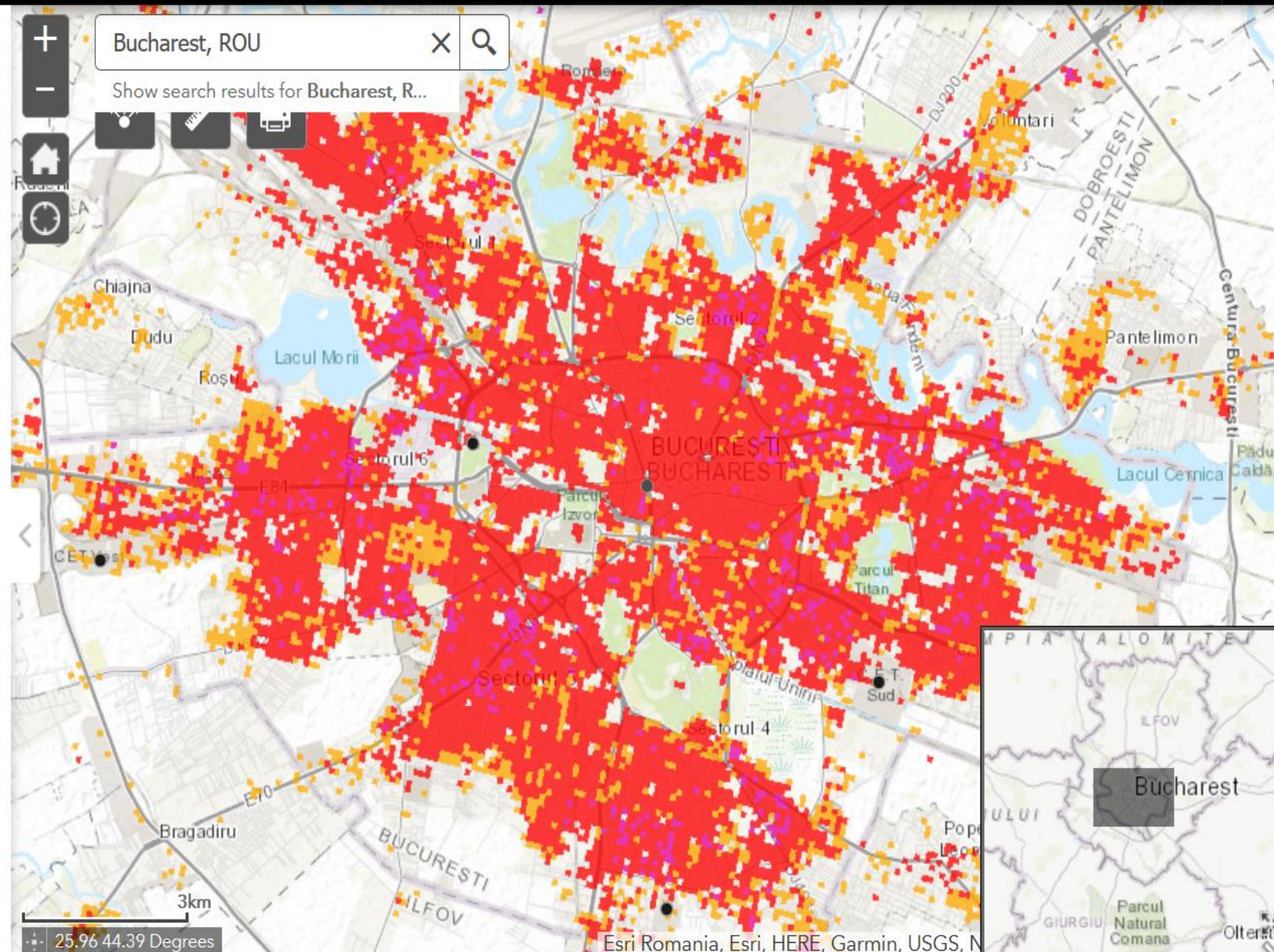
Layers

- Heat Synergy Regions (HRE4): Priority
- Excess heat activities (HRE4)
- Biomass Resources (BioBoost)
- Solar thermal district heating, 1000m buffer
- Geothermal heat (GeoDH)
- Recommended DH levels
- Coherent urban areas with one or more district heating system(s) today (HRE4)
- Prospective supply areas (HRE4)
- DH distribution costs (HRE4)
- Heat Demand Densities 2015 (HRE4)
  - ◆ HD\_2015
- Cold Demand Densities 2015 (HRE4)



Bucharest, ROU

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# Democratise the heating and cooling by visualisation (and Article 14)

- Information and empowerment of decision processes through the Pan-European Thermal Atlas (HC demand densities, RES, excess heat)
- Network builder and dialogue facilitator between public authorities, industry and investors
  - Does your country have (interactive) excess heat maps online?
  - Should we have a single one for all MS to allow cross-boarder cooperation and comparison?
  - Cohesion funds allocated finance in correspondence to National Energy and Climate Plans: How to enable the granularity of local and regional EE planning (excess heat) in HC?



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# Enable Heat Synergy Regions

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***Heat Synergy Regions are regions in which urban and rural areas combine their renewable energy potentials and excess heat sources beyond their political borders in order to optimise and create the most sustainable and low-carbon energy infrastructure.***

- How to enable public authorities to build Heat Synergy Regions?
- How can the EED help to unlock the synergy potential?



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# Coordinate from fuel to investment based

- **Expansion of thermal grids** is crucial to redesign the energy system and enable better integration of renewable energy and excess heat sources - district heating can cost-effectively provide at least half of the heating demand in 2050
  - Can the EED help to prioritise DHS in urban areas?
  - How to accelerate EE first in those countries with DHS? How to address the bottleneck of skilled workforce for refurbishment?
  - How can the EED help (to mobilise) finance for DHS?
- **Individual heat pumps** will be key to enabling energy efficiency and electrification in (rural) areas where district energy is not viable
  - How can policies be combined with targeted measures for energy savings as this improves the efficiency of the heat pumps and reduces the peaks in the electricity grids in cold periods?





# Ease use of excess heat through legal framework

- Example: Process heat of non-metallic mineral products covers approx. 40 % of the savings potential in Romania, but **industry would need the same level of approval to sell (low-temperature) excess heat as if they were representing a power plant.**
- Uninteresting for industries to get the required permissions.
  - How can the EED help to prioritise, ease and facilitate the use of excess heat?
  - How to increase competition in the HC markets and facilitating the entry of public, private and civic investors?



# Out of the box measures for the EED

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## **EED as a part of a local context and larger (energy) system**

- **Enable nature-based solutions**
- **Anticipate climate adaptation needs**
  - Where there is cooling there is heat. How can the EED effectively demand heat recovery?

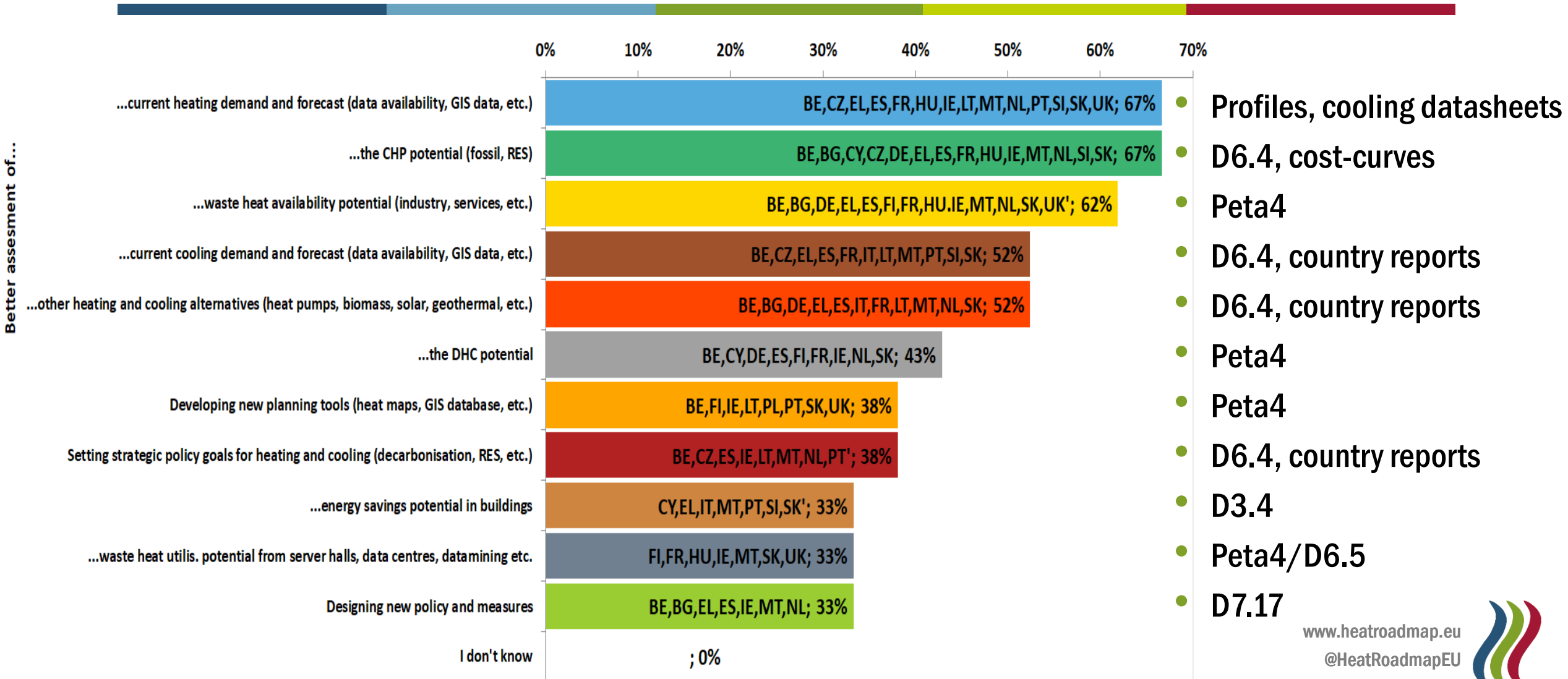


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# HRE4 and your information need



- Profiles, cooling datasheets
- D6.4, cost-curves
- Peta4
- D6.4, country reports
- D6.4, country reports
- Peta4
- Peta4
- D6.4, country reports
- D3.4
- Peta4/D6.5
- D7.17

# HRE4 and your information need

## Mapping

- [Demand and Resource Atlases for all 14 MSs](#)
- [Map of the heat synergy regions and the cost to expand district heating and cooling in all 14 MSs](#)
- [A final report outlining the methodology and assumptions used in the mapping](#)
- [A report describing how the maps can be used by lead-users](#)
- [Updated Peta atlas for each MS with the final level of district heating recommended in the scenarios](#)

## Profiling

- [Profile of heating and cooling demand in 2015](#)
- [Cooling technology datasheets in the 14 MSs in the EU28](#)
- [Baseline scenario of the heating and cooling demand in \*buildings\* and \*industry\* in the 14 MSs until 2050](#)
- [A report describing how the data, technology datasheets, and FORECAST tool can be used by lead-users](#)



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# HRE4 and your information need

## Savings

- [Method for developing demand cost-potential curves](#)
- [Demand cost curve for buildings and industry in the 14 MSs in the EU28](#)
- [Guide describing how cost-curves tool can be used by lead-users](#)

## Energy Systems

- [A report describing how these energy tools and models can be used by lead-users](#)

## Scenarios

- [Hourly energy system models for each of the 14 MSs for the business-as-usual scenario. Click here for data](#)
- [Methodology report for comparing the scenarios between the annual JRC-EU-TIMES and the hourly EnergyPLAN tools](#)
- [Heat Roadmaps: The final report presenting the heating and cooling strategies.](#)



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# Heat Roadmap Europe

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## Take aways and conclusions



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# Key findings from the HRE 2050 scenarios

- HRE4 shows that **decarbonisation is indeed possible with existing technologies** and that the coupling of sectors is key for the most efficient and feasible future energy/H&C system.
- The cross-sectoral energy planning approach of HRE reveals the following:
  - Substantial amounts of **cost-effective energy savings** are ready to be exploited and these are key for the decarbonisation of the energy system
  - **Synergy opportunities** by considering demands for transport, electricity, heating and cooling as a whole
  - Intelligent redesign of the energy systems to integrate sectors better, can **reduce costs of decarbonisation** (even without including health-related and climate change-related costs) – in this context it is important to include long-term economic calculations (instead of only 1-year state budget) in order for the savings to become evident
  - **DH in cities is one of the least-cost & most-efficient solutions** for reducing emissions and primary energy use. Increasing the share of district heating in combination with cheap thermal storages, heat pumps and CHP can **stabilise the electricity grid**



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# Key benefits from the HRE 2050 scenarios

- Country-specific Heat Roadmaps present solutions which:
  - underline a trend towards a more **capital-intensive** heat supply – in turn with **lowered operational expenses** which will lower the uncertainty of future fuel prices
  - open the market for locally based heat sources **thereby increasing the security of supply** and making the countries more resilient to geopolitical changes
  - create **local jobs** – both on sub-country level and in terms of strengthening the **competitiveness of industries** nationally as well as internationally
    - environmental impact on a local scale - due to emissions causing reduced quality of life and premature deaths, impacting air quality
  - environmental impact on a global scale - in relation to the **promises of the Paris Agreement**
- Policymakers may choose own prioritisation – economic feasibility, environmental impact, quality of life
- Countries that lead the way will have an **advantage** in terms of **competitiveness**.



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## Webinar series

Heat Roadmap Europe

**to be continued  
during the autumn  
2018**



Contact: [info@heatroadmap.eu](mailto:info@heatroadmap.eu)



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Pan-European Thermal Atlas:  
[www.heatroadmap.eu/maps](http://www.heatroadmap.eu/maps)



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