



# **The Strategic Research and Innovation Agenda for Renewable Heating and Cooling in Europe**



# The RHC-Platform

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- The **European Technology Platform on Renewable Heating and Cooling (RHC-Platform)** was created and endorsed by the European Commission in 2008.
- It brings together stakeholders from the **biomass**, **geothermal** and **solar thermal** sectors - including the related **cross-cutting technologies** - to define and implement a common research and innovation strategy for increasing the use of RES for H&C.
- **Cross-cutting technologies?**
  - **District Heating and Cooling**
  - Thermal Storage
  - Heat Pumps
  - Hybrid Systems

# Background and next steps

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Stakeholders, led by industry, come together to **agree a common vision** for the technology.

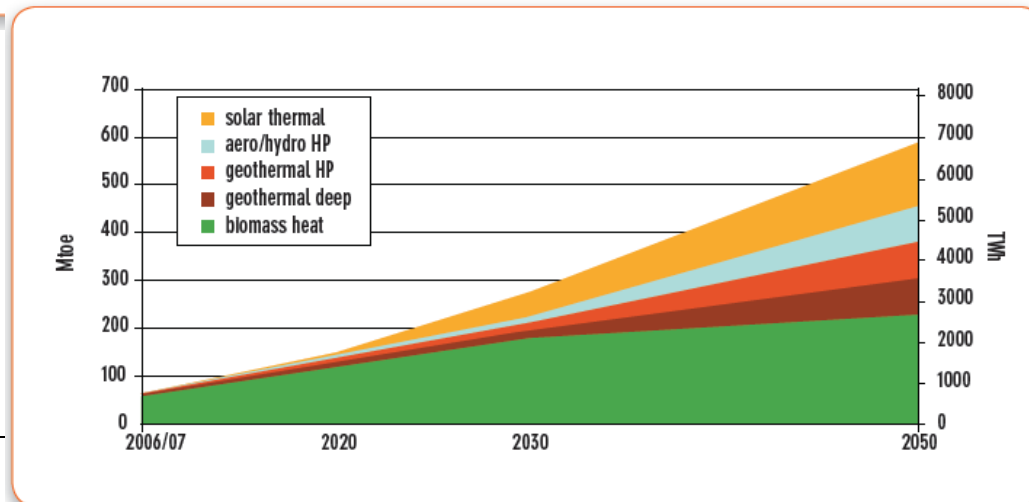
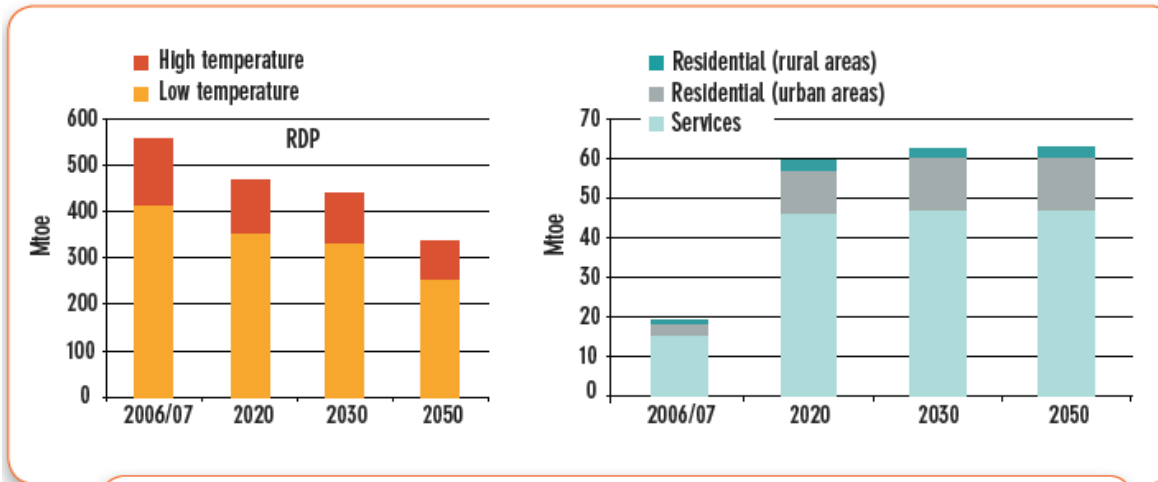


Stakeholders **define a Strategic Research Agenda** setting out the necessary medium- to long-term objectives for the technology.



Stakeholders **implement the Strategic Research Agenda** with the mobilisation of significant human and financial resources.

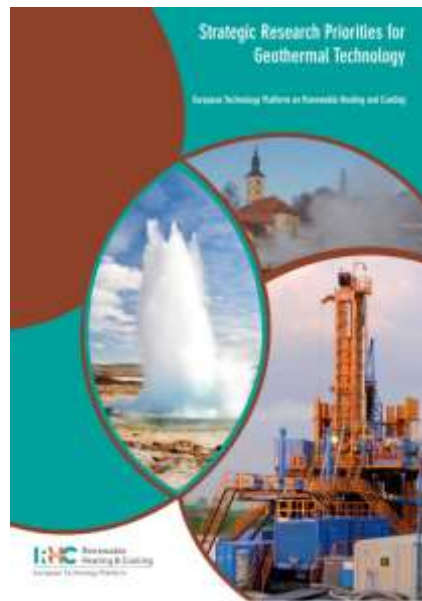
# Common Vision



Source: RHC-Platform (2011)

# Strategic Research Priorities (04/2012)

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# The pathway to the RHC-SRA

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The RHC-SRA is **not** a summary of the sectoral priorities

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# The pathway to the RHC-SRA

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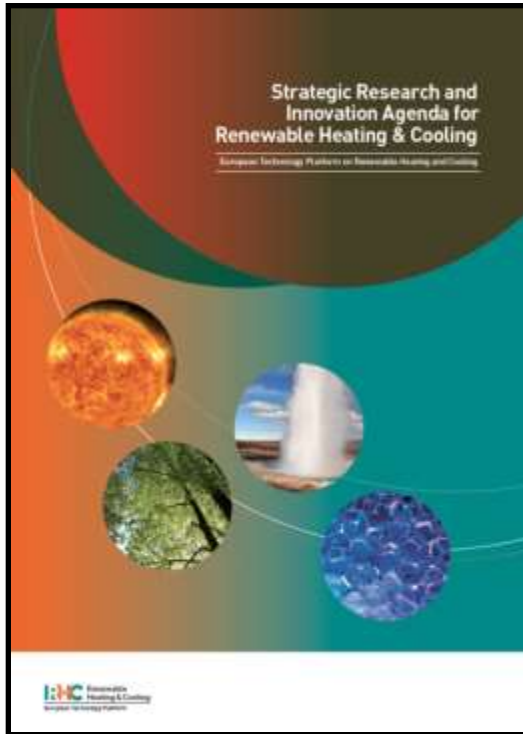


It is a **new** document focussing on

- How the different types of heating and cooling demand can be covered with renewable energy sources
- And what R&I activities are required to overcome the existing barriers

# Strategic Research and Innovation Agenda (2013)

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- Provide a comprehensive view of the **strategic research and innovation priorities** to enable an increasing share of H&C to be supplied by RES.
- Identify **state-of-the-art**, research **objectives** and critical **targets** (eg in terms of performance increase / cost reduction) to **realise the potential of RHC** technology.
- Set up recommendations for R&I funding in the timeframe of **Horizon 2020** and in line with the wider EU 2030 Energy and Climate Framework



# Structure

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- **Renewable Heating & Cooling:** Vision, Opportunities and Challenges
- **RHC Applications and R&I Priorities** by demand types:
  - Residential Buildings
  - Non-Residential Buildings
  - Industrial Processes
  - **District Heating and Cooling**
- **Enabling technologies** (ICT and Materials)
- **Research capacities and non-technological issues**
- **Outlook on the Implementation Roadmap** (budget and funding)

# Governing Principle

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The document is built on five “Governing Principles” which form the basic set of fundamental assumptions:

**I. Time scale**

- by 2020: Short term
- by 2030: Medium term
- after 2030: Long term

**II. Inclusiveness**

**III. Value Chain** approach, scale of **Technology Readiness Levels**

**IV. Temperature levels**

- up to 95°C: low temperature
- between 95°C and 250°C: medium temp.
- above 250°C: high temperature

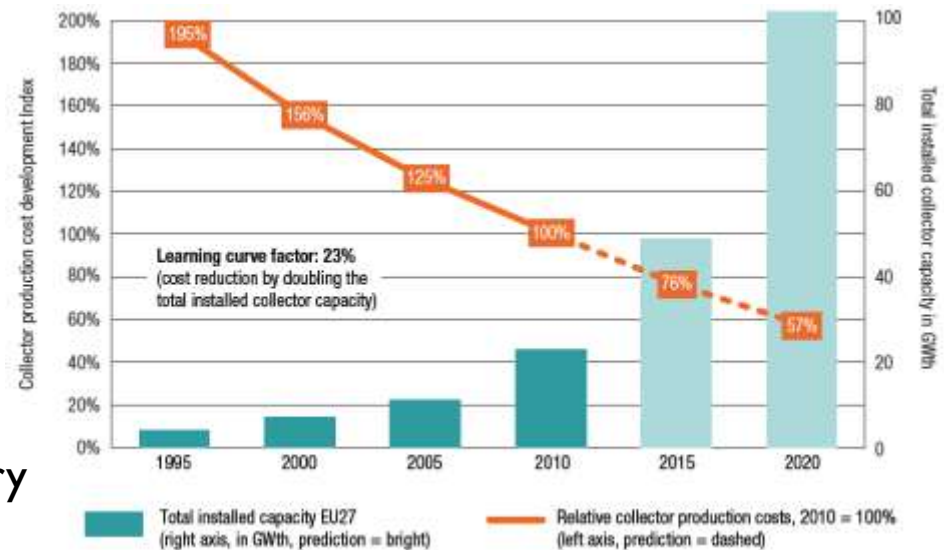
**V. References:** The Strategic Research Priorities for Biomass, Geothermal, Solar Thermal, and Cross Cutting Technologies

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# Residential buildings

- Main issues:
  - high level of comfort
  - automatic operation
  - low maintenance
  - reasonable cost
  - *clean energy*

Solar Thermal: A Success Story  
in Cost Reduction



# Non-residential Buildings

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- Main issues:
  - systems flexible in size
  - adaptive to quick changes
  - substantial amounts of cooling
  - cost is analysed closely

An area where the public sector can take the lead and provide examples!

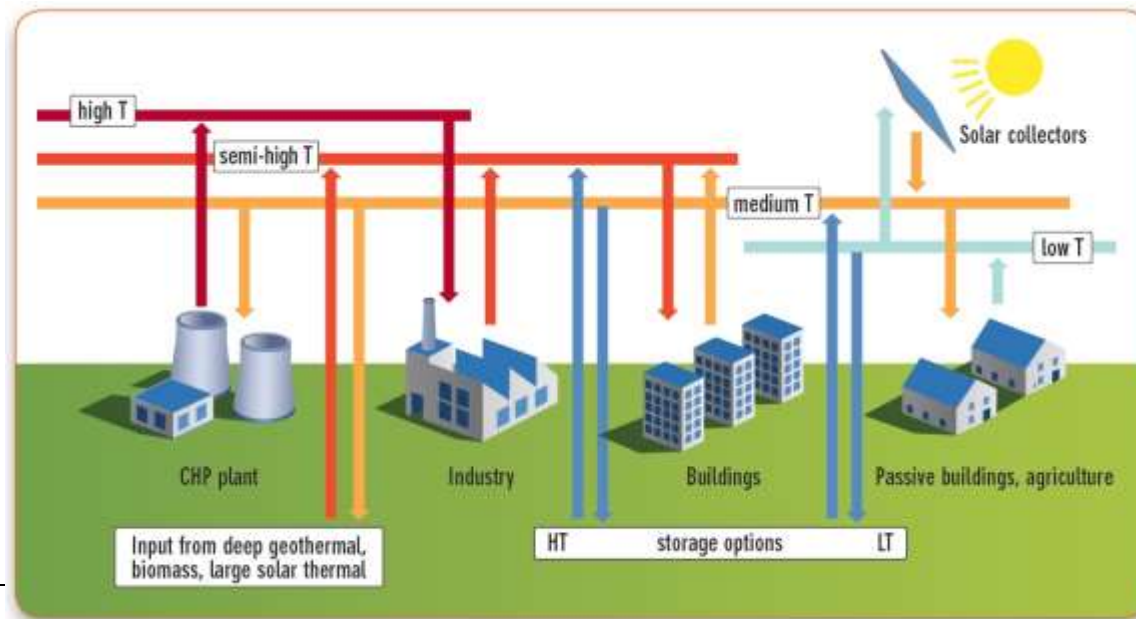
# Industrial processes

- Main issues:
  - Reliability
  - Competitiveness
- Industry: High demand and yet little RHC

	Biomass	Geothermal	Solar Thermal	Heat Pump
<b>High temperature</b> 251°C to 400°C				
<b>Medium temperature</b> 96°C to 250°C				
<b>Low temperature</b> 0°C to 95°C				

# District Heating and Cooling

- **The way to get large renewable energy capacities to the consumers**
- Intelligent grids with different temperature levels, heating and cooling



# Implementation Roadmap

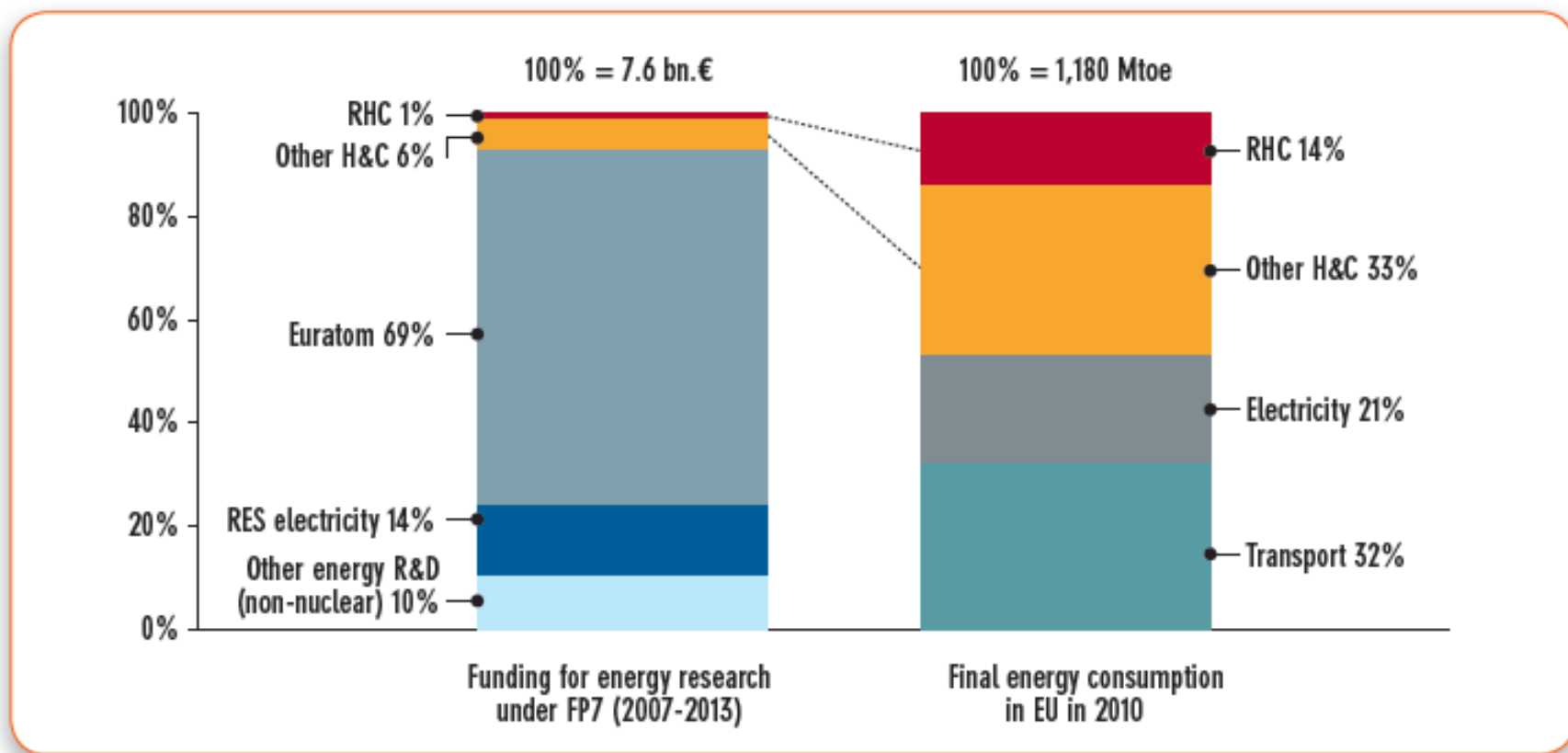
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# Funding of energy R&D in FP7



Source: RHC-Platform based on Pezzutto & Sparber (2013)



# Implementation Roadmap - Impact

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- Horizon 2020 / national funding
- EC Integrated Roadmap (kick-off on 17 Sept)
- Tool for industry and research organisation to plan R&D activities

# Closing remarks

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- The **decarbonisation** of the European H&C markets **is happening**, but not fast enough.
- **Expanding the market** for the use of local resources applications is key to reach EU energy and climate targets.
- We must **invest sufficient resources in Research and Innovation** to achieve:
  - ✓ significant cost reductions for different applications/capacities
  - ✓ enhance RHC systems and reliability
  - ✓ reduce payback time



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