

Low Carbon District Heating and CHP in the Future Energy Market: State of the Art and Perspectives in the light of current policies

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Euroheat & Power

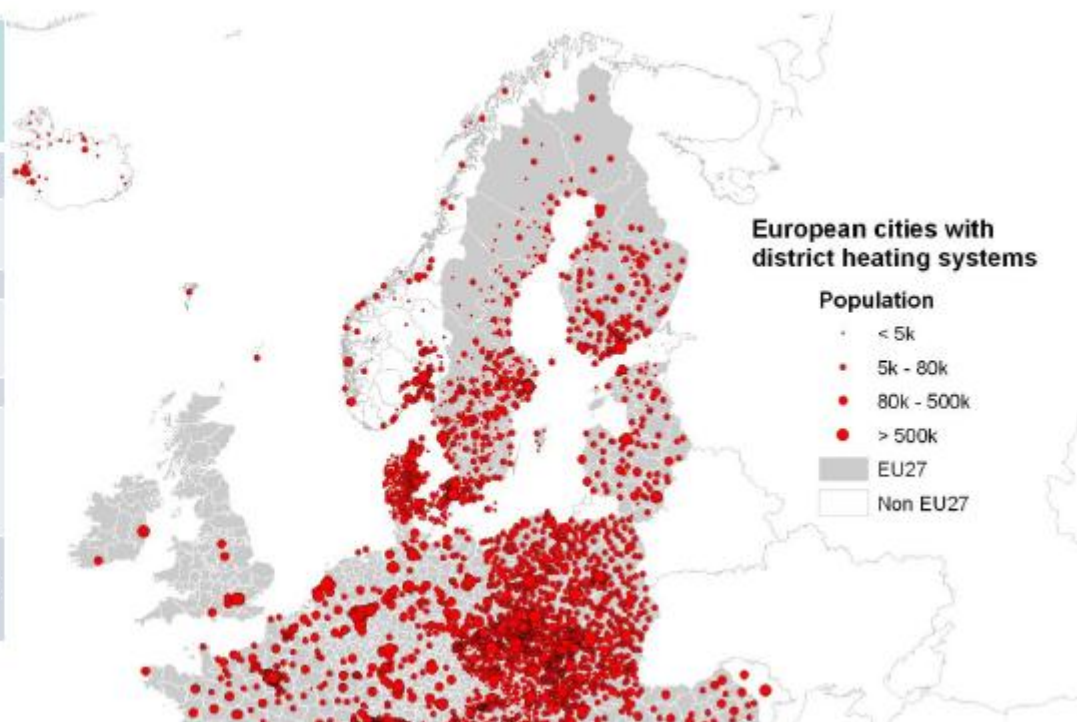
- Unites DHC sector in Europe and beyond: 26 national associations, utilities, manufacturers, research institutes worldwide
- Mission: EU advocacy, promotion of DHC, market analysis, research and technological development (projects)

DHC in the EU-27

- Market share (2010): 12%
- > 6000 systems
- 60 million citizens served
- Replacement value 60-80 bn. EUR
- Fundamental idea: reduce, recycle, replace:
> 80% recycl. heat (CHP and industry) and RES
- Remaining heat market (non-DHC): mainly fossil fuels (gas, oil) and electricity

Still counting...

	Europe	EU	EU27 population concerned	
			Million	Share
Systems	4174	3549	60	12%
Cities concerned	3731	3233	141	28%
NUTS3 regions - concerned	660	600	287	57%
NUTS3 regions - all	1461	1303	500	100%



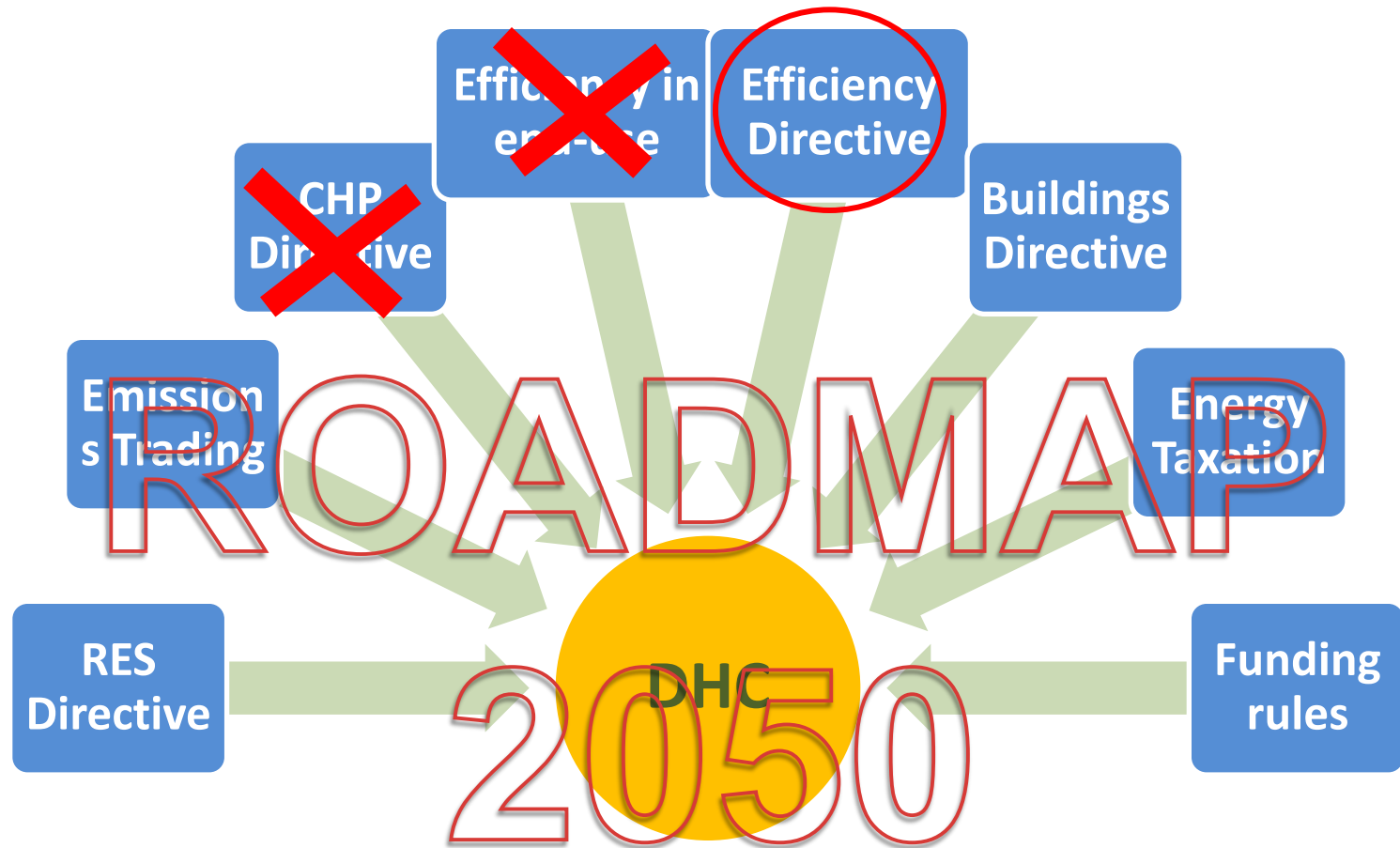
EU Energy summit 2011

The 2020 20% energy efficiency target as agreed by the June 2010 European Council, which is presently not on track, must be delivered.

The Council is invited to promptly examine the upcoming Commission proposal for a new Energy Efficiency Plan, setting out in more detail a series of policies and measures across the full energy supply chain.

The Commission is invited to table new initiatives on smart grids, including those linked to the development of clean vehicles, energy storage, sustainable bio fuels and energy saving solutions for cities

The EU legislative framework



Energy Efficiency Directive

- Member States to set indicative national energy efficiency targets
- Targets to take account of the overall objective of the Union
- EU energy consumption should be no more than **1474 Mtoe primary energy** or 1078 Mtoe final energy by 2020.

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on energy efficiency and repealing Directives 2004/8/EC and 2006/32/EC

Energy Efficiency Directive: Savings obligation

- Obligated parties (energy distributors and/or retail energy sales companies) to achieve new yearly savings of 1.5% of the annual energy sales to final customers from 2014 to 2020
- Possibility for Member States to get 25% of the overall targeted savings achieved through flexibility measures: *allow energy savings achieved in the energy transformation, distribution and transmission sectors, including efficient district heating and cooling infrastructure*

Energy Efficiency Directive: DHC comes first!

- Member State to prepare a comprehensive assessment of the potential for cogeneration and District Heating and Cooling,
- Member States to prepare a Cost-benefit Analysis (CBA) at territorial level. The CBA *‘shall be capable of facilitating the identification of the most resource and cost-efficient solutions to meeting heating and cooling requirements.’*
- Member States to *take adequate measures for efficient District Heating and Cooling and high-efficiency cogeneration to be developed and/or to accommodate the development of high-efficiency CHP*

Energy Efficiency Directive: Impact

- Countries with no CHP/DHC: go for it!
- Countries with CHP/DHC: keep going!
- Countries with high CHP/DHC shares: ensure fair treatment!
- EU State aid guidelines: make it possible!
- Other EU legislation: ensure consistency!

The decarbonised future:

Key questions

Renewable energy before
energy efficiency?

More interconnections,
more gas, more CCS or
using surplus heat and
renewables ?



Savings in end-use or
saving primary energy?

Heating and cooling only
with CO₂-free electricity?

Individually
or together?
Eco-buildings or
eco-districts?

Existing Studies



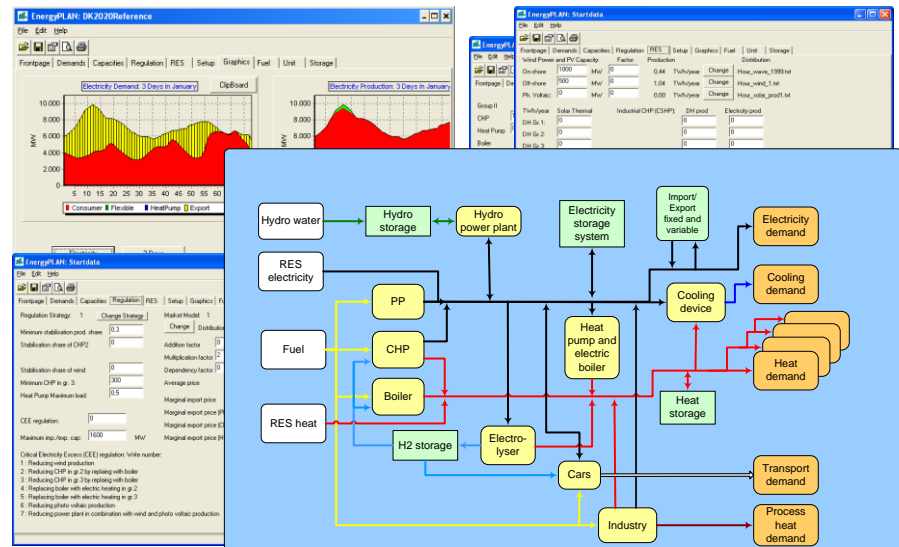
- Say CHP/DHC is important
- But fail to provide proper analysis of heating and cooling
- Have a too low time and geographical resolution to model the realities of the energy market, especially DHC
- Acknowledge the importance of DHC until 2030/2050
- But assume high shares of electric heating, low heat consumption and low shares of DHC by 2050



Heat Roadmap Europe 2050

- Aalborg University
- Halmstad University
- PlanEnergi

www.heatroadmap.eu

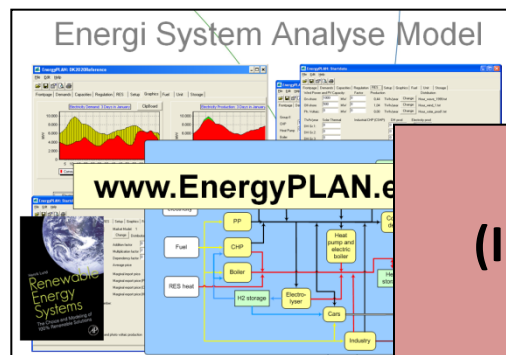


Europe IEA 2010 and EU CPI scenario 2050

CPI = Current Policy Initiatives



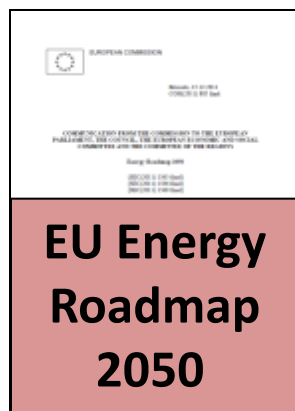
**IEA Statistics
2009**



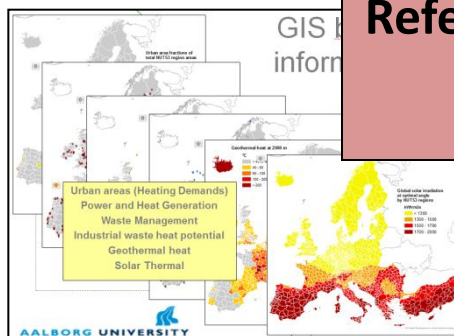
**Reference (12% DH)
(IEA 2010 and EU CPI 2050)**

Versus

**Reference plus 30% and 50% DH
(and CHP etc.)**

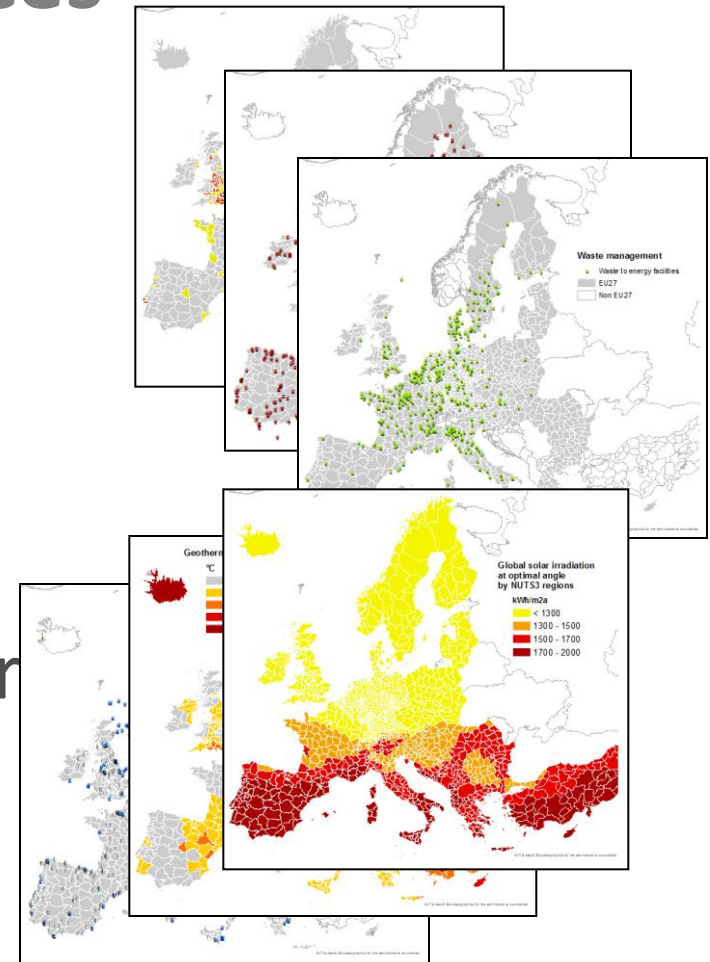


**EU Energy
Roadmap
2050**



Many Energy Sources

- Urban areas (Heating Demands)
- Power and Heat Generation
- Waste Management
- Industrial waste heat potential
- Geothermal heat
- Solar Thermal
- the average market share for district heating for buildings can increase to 30% in 2030 and 50% in 2050.



District Heating Benefits in 2 steps

Step 1: (Energy Efficiency)

- Increasing DH to 30% then 50%
- Increasing CHP
- Using Oil/Natural gas in CC-CHP

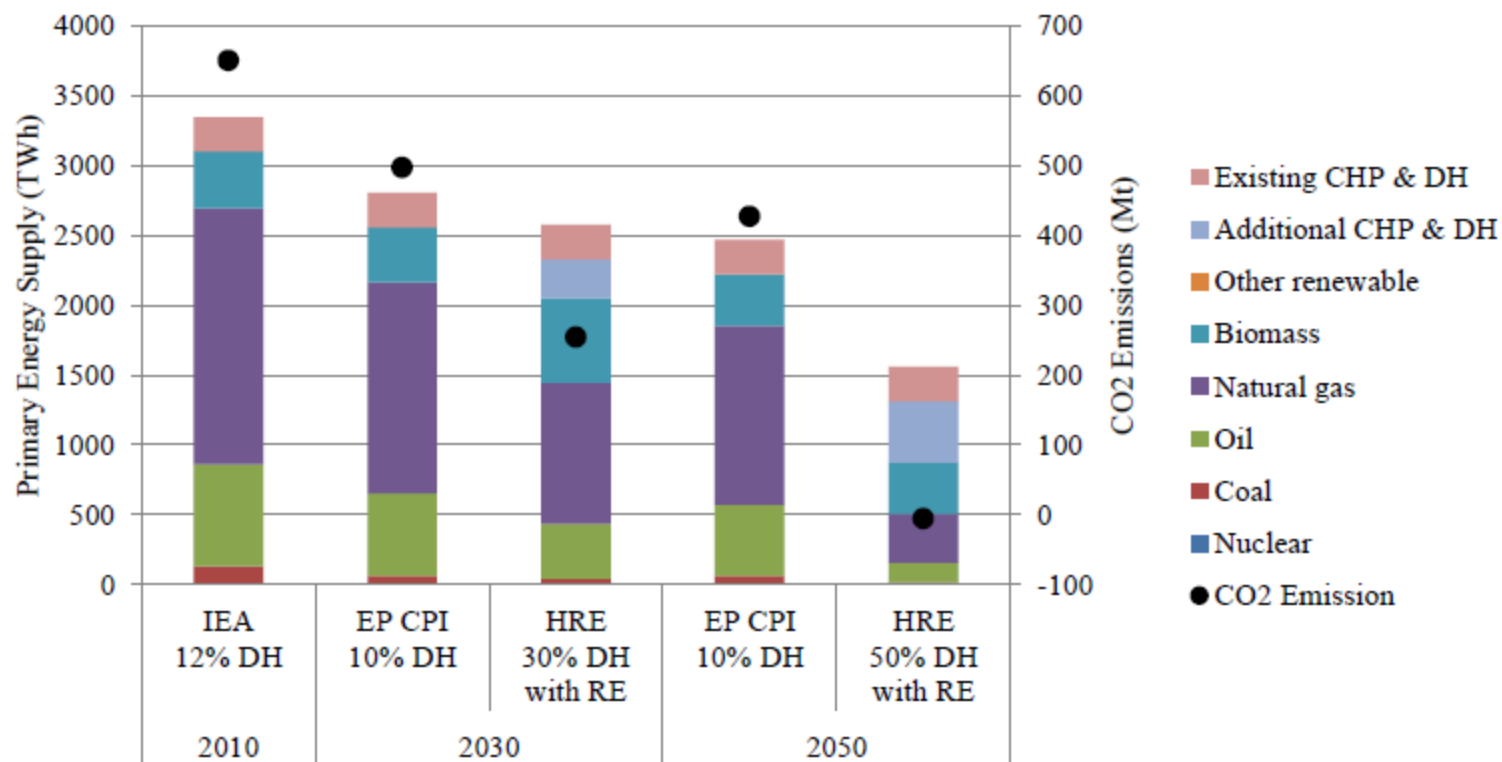
Step 2: (Utilise waste and RE sources)

- Industrial waste heat
- Waste incineration
- Geothermal heat
- Large-scale Solar Thermal



Better results

**Primary Energy Supply & CO₂ for Heating Buildings from 2010 to 2050
EP CPI vs. HRE RE**



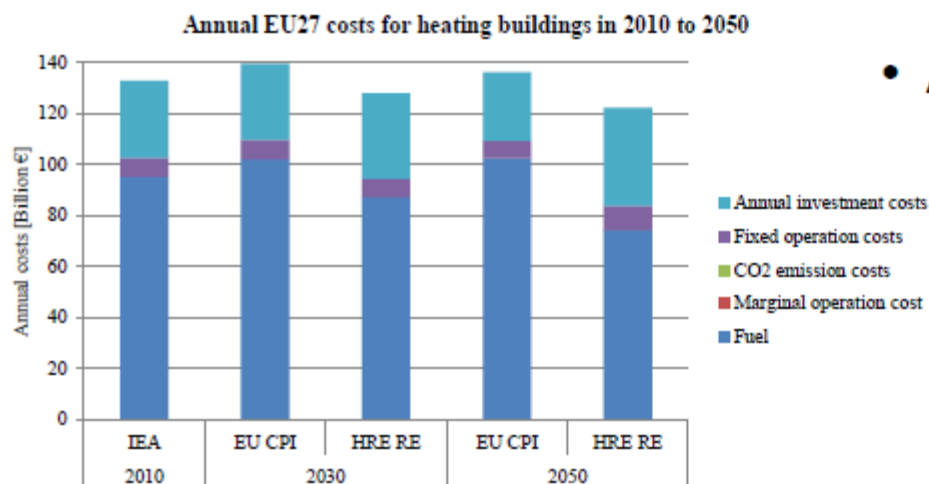
Conclusions HRE 2050 (first study)

2050

- Annual saved fuel costs of ~€30 Billion
- Total costs reduced by ~€14 Billion

2013-2050

- Total Additional Investment of ~€500 Billion



- Additional jobs:
 - 8-9 million man-years in total
 - Approximately 220,000 jobs/year

To make it happen: Essentials

- Develop better knowledge: statistics and modelling
- Provide higher political profile , re-balance attention for power and heat sector
- Focus on primary energy and eco-districts rather than eco-buildings
- Provide support and partnership where needed
- Use European Regional and Cohesion Funds for DHC infrastructure!
- Ensure State Aid can (easily) be granted for DHC under non-restrictive conditions!

Third International District Energy Climate Awards

September 23-24, 2013

The Millennium Broadway/Hudson Theater
New York, NY

www.districtenergyaward.org



WHY CITIES?

ENDING CLIMATE CHANGE BEGINS IN THE CITY

Start scrolling your browser to learn why cities are the key to addressing the global climate change problem.

Euroheat.org - Let's keep in touch!



Thank you for your attention!



**Smart and Competitive: DHC
for Cities of the Future**

**Join us on 27-28 May 2013 for
our 36th Congress
in Vienna, Austria**

www.ehpcongress.org