District Heating and Cooling in the EU Energy Policy Framework and the EU Strategy for Heating and Cooling

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Current policy and legislative framework
The legal framework of the EU energy efficiency policy

- Ecodesign Directive 2009/125/EC
- Energy Labelling Directive 2010/30/EU

2020 & 2030 goals
2030 climate and energy Framework

- **2020**
  - 20% GHG
  - 40% GHG

- **2030**
  - 20% RES
  - ≥ 27% RES
  - 20% EE
  - 27% EE (review)

New Key Indicators (e.g. R&D)

New governance system
The way towards:
The Energy Union

Where we want to go:
A secure, sustainable, competitive, affordable energy for every European

What this means:
Energy security, solidarity and trust
A fully integrated internal energy market
Energy efficiency first
Transition to a long-lasting low-carbon society
An Energy Union for Research, Innovation and Competiveness

How we want to reach it:

5 GUIDING DIMENSIONS
15 CONCRETE ACTIONS
43 INITIATIVES
1 Secure supplies

We have to become less dependent on energy from outside the EU: This means increasing transparency on gas supply; diversifying sources, supplies and routes; working together on security of supply and developing a stronger European role in global energy markets.

2 Internal energy market

Energy should flow freely across the EU – without any technical or regulatory barriers: This means connecting markets through interconnections and implementing and upgrading the internal market's software while enhancing regional cooperation and empowering consumers.

4 Emissions reduction

An ambitious climate policy is an integral part of our Energy Union: The next challenge will be to enforce the 2030 energy and climate framework, while becoming the number one in renewables.

5 Research & innovation

Developing EU technological leadership in low carbon technologies
3 Energy efficiency

Rethink energy efficiency as an energy source in its own right

This means increasing energy efficiency, in particular in the building sector, and promoting an energy-efficient and decarbonized transport sector as well as efficient products.
Energy efficiency - Concrete actions

- Review the Energy Efficiency Directive
- EU strategy for Heating and Cooling
- Review the EPBD
- Strengthened financial instruments to support investments in energy efficiency
- Review the Energy Labelling and Ecodesign Directives
Directive 2012/27/EU

- Publication in OJ: 14 November 2012
- Entry into force: 4 December 2012
- Transposition: 5 June 2014

http://ec.europa.eu/energy/efficiency/eed/eed_en.htm
THE ENERGY EFFICIENCY DIRECTIVE

- Services
- Sectoral measures
- Households
- Public sector
- Energy supply
- Industry

- Indicative national EE targets
- EED
- General measures promoting EE
- Monitoring & Reporting
District Heating and Cooling in the Energy Efficiency Directive

Directive 2012/27/EU on Energy Efficiency promotes efficient district heating and cooling

- Article 14 (1)-(4): Comprehensive Assessment of CHP, DHC potentials - 31 December 2015
- Article 14 (5)-(8): Cost-benefit analysis obligation for large power and industrial plants 5 June 2014
- Article 24 (6): Statistics - April 2015 (delay)
- Other directly relevant Articles: 2 – definitions; 3 – EU and national targets; 4 long-term building renovation strategies; 9-12 – metering & billing & consumer information; 20 – financing.

Only six Member States declared full transposition of the EED
Comprehensive Assessment (CA) and country wide cost-benefits analysis (CBA)

- Current situation, trends – baseline scenario
  - Time horizon: min. 10 years, alignment with EU/MS long-term energy and climate goals
  - Comprehensive data of demand & supply, high granularity – Heat is local!
  - Existing and planned technologies, infrastructures
  - Heat mapping: energy supply sources (RES, waste, fuels, plants), demand points (cities, industries)

- EE and RES goals, options to achieve them – alternative scenarios
  - CHP, DHC, RES, waste, efficient individual technologies infrastructures (linking with electricity and industry)
CBA – economic analysis + financial analysis
  - Economic, social and environmental benefits
  - Economic, social and environmental costs
  - Many of these do not have (full) market valuation - externalities
  - Financial analysis: discounted cash flows
  - Sensitivity analysis

Geographical boundaries, system boundaries are key
  - Integrated approach
  - CBA in city/municipal/district boundaries
  - Taking into account national/EU goals
Selection of alternative scenarios with cost-benefit surplus (key metric NPV)

- Scenarios with negative financial outcome but positive economic (social, economic, environment factors) outcome can be selected – gaps can be bridged by policies, regulations, support

- Measures to realize economic potentials for CHP and DHC (mandatory), other efficient H/C options (optional)

- If benefits exceed costs – MS must implement DHC
EU Strategy for Heating and Cooling
Heating and Cooling Strategy

- **Energy efficiency and decarbonisation (renewable energies) in buildings and industry:** cost-efficient balance between energy efficiency and decarbonisation

- **Long-term perspective and pathways for EE, decarbonisation (buildings, industry)**

- **Integrated holistic approach:** heat/cool as part of the energy systems, synergies between energy carriers, technologies, infrastructures and markets

- **Instruments?**
  - Energy planning and mapping
  - Linking heat and electricity
  - Linking industry and buildings (waste heat)
  - Building refurbishment, building and product regulation,
  - Technology deployment, better markets, consumer awareness,
  - Financing, capacity building, R&D&I&D

- **Benefits:** security of supply, climate and environment, consumer prices and choice, competitiveness
Heating and Cooling Strategy

- **Energy transition goals by 2050 versus current situation**
  - Energy efficiency improvement (demand reduction)
  - Decarbonisation levels (CO\textsuperscript{2} emissions reduction)
  - Renewable deployment levels

- **Gaps? How to bridge the gaps?**

- **Instruments, e.g.**
  - Buildings' regulation (energy performance certificates, energy performance requirements, renovation rates)
  - District heating and cooling
  - CHP, storage, waste heat recovery
  - Renewable deployment and linking heat/cool and electricity
  - Technologies (deployment, I&R&D)
  - Financing

- **The strategy is to impact the review of:**
  - Renewable Energy Directive
  - Energy Efficiency Directive
  - Review of the EU internal energy market (electricity market design, retail markets)
  - Security of supply package
  - Smart financing framework
  - R&D&I programmes
Key issues: Buildings

- Effectiveness of the current framework in EPBD
- Cost-effective balance between energy savings and sustainable energy supply
- Refurbishment rates
- Integrate building level and district level energy efficiency and decarbonisation in building energy performance measurement and requirements in cities?
- District heating/cooling versus low-energy buildings
- Deployment of new RES and EE technologies in buildings
- Integrate electricity grid performance and smart grid/building/product performance parameters - buildings’ role in demand response/management, self-consumption and decentralised production
- Financing
Key Issues: Industry

- Overall technical potential 22% energy savings; 8-10% is economically viable (PB 2-5 years) – This is not enough to meet policy goals

- Potentials need to be realised! For this:
  - Information, specialised knowledge to overcome "herd mentality" - lack of awareness is pervasive
  - Tailor-made concepts and sharing best practices (sector, sub-sector specific)
  - Non-ETS sector: large potentials

- Breakthrough technologies are needed

- Realise Potentials! Go Beyond Potentials! Integration! Partnerships and Cooperation!
Key Issues (3): Financing

- Tailor-made, easy-to-use, off-the-shelf instruments – build capacity of financing/investment community
- Standards for investment process, procurement, building renovation, measurement, valuation, verification of energy efficiency in projects
Key Issues: Technology

- Technologies are there but broader deployment face many hurdles: trained installers are key!
- New business models for commercialisation and streamlined regulations
- Energy labels and eco-design are important
- Hybrid packages with renewables
- Replacement rates and link with building renovation
- Gaps in technologies: high-temperature process – R&D&D
- Technology highlights: Smart district heating/cooling able to level seasonal and load variation with storage, industrial heat pumps, solar technologies
Key Issues (5): Heat markets

- Consumers in centre! information, personalised advice
- Level-playing field, competition
- Transparent prices
- Long-term national strategies, clear policy goals are the foundations for heat markets – rallies market actors, efforts
- Heat markets are local
- Role of local authorities is central
  - Heat mapping and planning,
  - Regulatory framework (e.g. for pricing, buildings),
  - Coordination, partnerships,
  - Project structuring, financing and investing
  - Coordinating with building renovation, construction
Key principles (1)

- Better data and understanding of existing heat markets;
- Better understanding of long-term pathways to decarbonise energy use in buildings and industry;
- Clear identification of priorities for action, of trade-offs and of synergies between policies and measures;
- Viable solutions to accelerate the renovation rate of buildings and the synergies between energy efficient construction and heat supply from district heating and cooling;
- Overcoming of barriers to investment in energy efficiency and renewable energy in buildings and industry.
Key principles (2)

Untapped potential to increasing energy efficiency and renewable energy use in heating and cooling through:

- Broader deployment of existing technologies;
- The development of new technological solutions;
- The use of waste heat from industry in buildings;
- The use of thermal storage to smooth out peaks for electricity demand;
- Integrated approach making the connection between the heating sector and the electricity sector.
EU Heating and Cooling Strategy

- Adoption 2015: November 18 (planned)
- Communication + SWD
  - No I.A.: use of existing and on-going studies
- Consultation Forum: 9 September
  - 5 issues papers: buildings, industry & tertiary, linking heat/cool and electricity, technology, integrated approach
  - District heating and cooling is a key element in all papers
- Finalisation from September onwards
Thank you!