Upgrade District Heating

Energy efficiency legislation for the higher uptake of sustainable renewable heating and cooling

Radoš Horáček
Energy Efficiency Unit ENER.B2

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The Climate Target Plan published in September 2020 shows that “at least 55% target” by 2030:

• 1) is feasible;
• 2) will put us on the right trajectory towards climate neutrality;
• 3) requires more effort and contribution of all sectors of economy.

The Climate Target Plan prepared the ground for the necessary transformation of policies for the decarbonisation of the European economy as set out in the European Climate Law.
The Fit for 55 Package – Overview

The package aims to make the EU ‘fit for 55’ and deliver the transformational change needed in a
• fair,
• cost-efficient and
• competitive way.

It cements the EU’s global leadership by action and by example in the fight against climate change.
Revised renewable energy directive

**Overall RES share**

- **32%** EU binding
- MS contributions + indicative formula

**EU binding**

- **38-40%** MS contributions + indicative formula

**REDII**

- **14.4%** 2010
- **19.7%** 2019
- **32%** 2030 (REDII)
- **33%** 2030 (MS plans)
- **38-40%** 2030 (Fit-for-55)

**Fit-for-55**

- **1.1 pp annual increase, indicative**
- **1.0 pp in district H&C, indicative**
- **List of measures, indicative**

**NEW**

- **49% indicative** RES share in buildings
- **1.1 pp indicative** RES share annual increase in industry

**Heating & Cooling**

- **1.1 pp annual increase, indicative**
- **1.0 pp in district H&C, indicative**
- **List of measures, indicative**

**NEW**

- **2.1 pp in district heating, indicative**
- **Extended list of measures, indicative**

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**European Commission**
Revised energy efficiency directive

Energy efficiency targets

Ambition: At least **-32.5%** reduction in energy consumption

Baseline: Compared to the Reference Scenario 2007 projections for 2030

Exemplary role of public sector

Annual reduction of energy consumption of 1.7% in public sector (MS to select public bodies)
Revised energy efficiency directive

New contractual rights for DHC and hot water

Member States:

Shall ensure that *final customers* are granted the following basic contractual rights:

- A contract with their supplier that specifies a set of basic information (as in the Electricity Directive 2019/944)
- Adequate notice of any intention to modify contractual conditions
- A wide choice of payment methods
- Household customers who have access to prepayment systems shall not be placed at a disadvantage by the prepayment systems

*Both final customers and final users...*

...shall have the right to a good standard of service and complaint handling by their suppliers

...shall be offered fair and transparent general terms and conditions in plain and unambiguous language

...shall be protected against unfair or misleading selling methods
Revised energy efficiency directive
Vulnerable consumers and energy poverty

Member States:

- Shall prioritise for energy-poor and vulnerable households
- May impose the obligation on distributors and retailers, and may set up a dedicated fund
- Shall take measures to empower and protect energy-poor and vulnerable households
- Shall make best possible use of public funding - at national and Union level – to empower and protect vulnerable customers and to alleviate energy poverty.
- Shall establish a network of experts to develop strategies in implementing energy efficiency improvement measures alleviating energy poverty.

ETS
- Increase clean energy offer to end users
- Innovation & investment in new energy sources
- Modernisation of existing infrastructure
- 20% of revenues from ETS extension
- Temporary direct subsidies to households and transport users

SCF
Revised energy efficiency directive

Energy efficiency for DH companies

Energy management systems and energy audits

- Implementation of an **energy management system** as a default obligation for large energy consumers (above 100TJ)
- An **energy management system** or an **energy audit** for energy consumers (above 10TJ)

Data centres

- Reporting for data centres with a significant energy consumption as of 2024
- Requirement for reuse of waste heat from data centres and other installations

Heating and cooling

- Stricter **planning and follow up** of comprehensive assessments, including reach-out to local and regional level
- **Revised definitions** of efficient district heating and cooling and efficient cogeneration to ensure fully decarbonised heat or cooling supply

Quality checks required to ensure the validity and accuracy of energy audits

Art. 11

Art. 23-24

Revised energy efficiency directive
Revised energy efficiency directive

1. In order to increase primary energy efficiency and the share of renewable energy in heating and cooling supply, an efficient district heating and cooling system is a system which meets the following criteria:
   a. until 31 December 2025, a system using at least 50% renewable energy, 50% waste heat, 75% cogenerated heat or 50% of a combination of such energy and heat;
   b. from 1 January 2026, a system using at least 50% renewable energy, 50% waste heat, 80% of high-efficiency cogenerated heat or at least a combination of such thermal energy going into the network where the share of renewable energy is at least 5% and the total share of renewable energy, waste heat or high-efficiency cogenerated heat is at least 50%;
   c. from 1 January 2035, a system using at least 50% renewable energy and waste heat, where the share of renewable energy is at least 20%;
   d. from 1 January 2045, a system using at least 75% renewable energy and waste heat, where the share of renewable energy is at least 40%;
   e. from 1 January 2050, a system using only renewable energy and waste heat, where the share of renewable energy is at least 60%.

2. Member States shall ensure that where a district heating and cooling system is built or substantially refurbished it meets the criteria set out in paragraph 1 applicable at such time when it starts or continues its operation after the refurbishment. In addition, Member States shall ensure that when a district heating and cooling system is built or substantially refurbished, there is no increase in the use of fossil fuels other than natural gas in existing heat sources compared to the annual consumption averaged over the previous three calendar years of full operation before refurbishment, and that any new heat sources in that system do not use fossil fuels other than natural gas.

3. Member States shall ensure that as from 1 January 2025, and every five years thereafter, operators of all existing district heating and cooling systems with a total energy output exceeding 5 MW and which do not meet the criteria set out in paragraph 1(b) to (e), prepare a plan to increase primary energy efficiency and renewable energy. The plan shall include measures to meet the criteria set out in paragraph 1(b) to (e) and shall be approved by the competent authority.
ANNEX III

**METHODOLOGY FOR DETERMINING THE EFFICIENCY OF THE COGENERATION PROCESS**

Values used for calculation of efficiency of cogeneration and primary energy savings shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use.

(a) **High-efficiency cogeneration**

For the purpose of this Directive high-efficiency cogeneration shall fulfil the following criteria:

– cogeneration production from cogeneration units shall provide primary energy savings calculated according to point (b) of at least 10% compared with the references for separate production of heat and electricity;

– production from small-scale and micro-cogeneration units providing primary energy savings may qualify as high-efficiency cogeneration;

– direct emissions of the carbon dioxide from cogeneration production that is fuelled with fossil fuels, are less than 270 gCO2 per 1 kWh of energy output from the combined generation (including heating/cooling, power and mechanical energy).

– When a cogeneration unit is built or substantially refurbished, Member States shall ensure that there is no increase in the use of fossil fuels other than natural gas in existing heat sources compared to the annual consumption averaged over the previous three calendar years of full operation before refurbishment, and that any new heat sources in that system do not use fossil fuels other than natural gas.
Sectoral ambition—Shifting to modern and consumer based DHC and Buildings

**District Heating and Cooling:**
- Increased indicative target to 2.1 percentage point
- Stronger consumer information and network access requirements
- Stronger coordination with other energy networks to facilitate system integration
- Coordination framework to harness the potential sources of waste heat and cold

**Buildings:**
- 49% renewable energy benchmark to monitor efforts and progress
- Training and skills
- Complementary to EED and EPBD

European Commission
Examples of renewable-based efficient district heating systems


<table>
<thead>
<tr>
<th>Country</th>
<th>Case Study</th>
<th>Installed capacity</th>
<th>Renewable Energy Sources</th>
<th>Waste Heat/Cold Sources</th>
<th>RES share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Taarnby DHC</td>
<td>DH: 60 MW DC: 6.5 MW</td>
<td>Renewable electricity, Thermal storage, Biomass</td>
<td>Ambient energy (Wastewater)</td>
<td>91%</td>
</tr>
<tr>
<td>Denmark</td>
<td>Jægerspris DH</td>
<td>20.1 MW</td>
<td>Solar thermal, Thermal storage, Ambient energy (from the air)</td>
<td>CHP (gas-fuelled)</td>
<td>56%</td>
</tr>
<tr>
<td>France</td>
<td>Paris-Saclay DHC</td>
<td>DH: 37 MW DC: 10 MW</td>
<td>Geothermal energy</td>
<td>Data centers Laboratory</td>
<td>60%</td>
</tr>
<tr>
<td>Germany</td>
<td>Mieres DH</td>
<td>4.1 MW</td>
<td>Geothermal energy from a closed colliery</td>
<td></td>
<td>98%</td>
</tr>
<tr>
<td>Spain</td>
<td>Barcelona-Distrilima DHC</td>
<td>DH: 79 MW DC: 113 MW</td>
<td>Renewable electricity, Thermal storage, Ambient energy (from the sea)</td>
<td>Waste-to-energy</td>
<td>97%</td>
</tr>
<tr>
<td>Germany</td>
<td>HafenCity DH (Hamburg)</td>
<td>28.3 MWth, 1.5 MWc</td>
<td>Biogas</td>
<td>Industrial heat, Thermal storage</td>
<td>90%</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Vilnius DH</td>
<td>1,702 MWth</td>
<td>Biomass</td>
<td>In 2021, Waste-to-energy</td>
<td>55%</td>
</tr>
<tr>
<td>Italy</td>
<td>Milan DHC</td>
<td>DH: 901 MW DC: 7.5 MW</td>
<td>Geothermal energy</td>
<td>Industrial heat, Waste-to-energy</td>
<td>68%</td>
</tr>
</tbody>
</table>
EU-27 District heating supply fuel mix in 2018

Source: Study by Tilia under ENER/C1/2018-496)
Thank you