BREAKING FREE FROM GAS DEPENDENCY

Euroheat & Power contribution to the REPower EU initiative

9 May 2022

The tragic events occurring in the eastern part of the continent have severely threatened EU energy security, due to the high dependency of many countries on Russian natural gas.

To break free from fossil fuels imports and accelerate the decarbonization of Europe's heating sector, we must massively deploy home grown and sustainable heating solutions.

Locally owned and a flagship of the European energy industry, district heating is a critical piece of the equation.

Until the next winter, the strongest options available lie into changing consumer behaviour to reduce heat demand and strengthening the EU and international energy solidarity. Nevertheless, much can be achieved in the next 2 to 5 years to modernize and expand district heating networks, accelerate the deployment of new projects and integrate larger shares of renewable and waste heat in district heating and cooling.

Why is DHC important for REPower EU?

District heating has immense potential to grow in Europe: recent research underline that it could supply 50% of Europe's heat demand by 2050. The remaining 50% are met with heat pumps in areas with a lower density of population.

District heating and cooling is the gateway to renewable heat: the seven European countries with the highest national shares of renewable heating and cooling also have the highest shares of district heating in their heat markets (See annex II on Iceland, Sweden Estonia, Finland, Latvia, Denmark, Lithuania).

District heating is a proven solution to phase out fossil heating (natural gas, oil and coal): Renewable and waste heat sources represent nearly a third of the energy supply used in the DH sector and can grow much further. Up to the 25% of district heating could be supplied by industrial waste heat and more than 10% of the EU's total energy demand for heating and hot water could be met by heat from data centers, metro stations, tertiary buildings, and waste-water treatment plants. A recent assessment by Agora Energiewende with the support of Artelys, TEP Energy and Wuppertal Institute found that district heating has a technical potential to achieve around 125 TWh (≈12.5 bcm) in gas savings by 2027.

District Heating supports a more stable and integrated energy system: District heating unlocks new flexibility sources by fostering synergies between technologies, energy carriers, infrastructure, and sectors. For instance, coupled with a large heat pump, DHC networks can absorb large amounts of renewable electricity, providing cost-efficient balancing and storage to the grid. Heat networks can also connect nearby buildings with local waste heat and cold sources.

Relying on local sources allows district heating customers to be shielded from energy prices volatility, as fossil fuels are priced at global level. District heating is also generally a more affordable solution than individual fossil-fired solutions.

In the near term, behavioral change is critical as well as strengthening Europe's internal and international energy security.

In the near term – from now until next winter, the key actions to cut gas consumptions are mostly related to customers behaviour and a necessary increased cooperation at EU and international levels to secure diversified and alternative energy sources. The capacity for operators to switch fuels are limited in reality, as new supplies would require establishing in a rush new supply routes and storage facility (e.g. switch to biomass or to solid fossil fuels).

In the next 2-5 years, we can roll-out massively sustainable district heating & cooling systems, accelerating the decarbonisation of Europe's heating sector and cutting gas dependency.

Under this time horizon, the District Heating sector can bring a strong contribution with the densification of existing networks and converting existing plants to alternative renewable and waste-heat sources.

1. **Densify and modernize existing DHC networks**: The prolongation of existing infrastructure to connect new areas and buildings can be implemented relatively quickly. Countries with developed DHC networks such as Denmark, have already announced that 50% of households heated with gas would be connected to district heating by 2028.

2. **Phase-in new projects for renewable and waste heat**: The development of new networks - including the planning, permitting, construction and commissioning – can be achieved in a couple of years depending on local contexts.

3. **The introduction of alternative renewable sources into an existing installation using natural** gas can also happen within this time horizon. For instance, sustainable biomass can be phased in third generation networks, without additional investment in the pipe network. In areas where the heat density is not suitable for district heating, the switch to heat pumps will provide a way to decrease demands for natural gas but may require strengthening electricity grids (see Annexes I and III for examples).

The **adoption of ambitious provisions on heating and cooling within the Fit for 55 Package** – in particular RED, EED, ETS, EPBD – will be critical to drive the expansion and modernisation of efficient DHC in the next 5 years. Nevertheless, concrete additional measures can be undertaken to further unlock the potential of efficient DHC:

1. **The REPower EU plan must foster the deployment of both residential and large-scale heat pumps.** We are concerned that the current proposal does not acknowledge the role of large-scale heat-pumps to boost renewable district heating systems. For example, the new district heating system in Heerlen, the Netherlands, is based on a few large-scale geothermal heat pumps which power large office buildings and

residential heating and cooling needs thereby replacing imported fossil gas. On other markets for instance in Nordics, large heat pumps are already an important and growing share of District Heat production (over 1GW installed capacity for Sweden alone).

2. **Member States must identify Flagship Efficient DH projects that can be accelerated with dedicated EU funds and/or quicker procedure (access to regional funds, State aid notification approval).** In many countries the potential to develop new Efficient DH, as well as expanding and modernizing existing schemes is largely untapped. The proposal is to ensure these projects get off the ground within the next five years. This can be achieved by triggering new investment decisions for efficient and sustainable DHC where the potential has been identified, or by accelerating ongoing DHC projects being commissioned or built.

3. **The Do Not Significant Harm Principle Guidelines underpinning the implementation of the Recovery and Resilience Facility (RFF) should allow funding to Heating infrastructure associated to Efficient DHC[1] and those systems – not yet Efficient – where the operator provides a roadmap to reach climate neutrality in relation with the national Energy and Climate plan.** In Finland a RFF-funded scheme to replace the remaining 120k oil boilers with Efficient DHC was not accepted by the Commission in spite of the anticipated benefits in terms of increased security of supply and decarbonization. In some cases, the upgrading DHC networks is a pre-requisite to integrate larger shares of renewables and waste-heat into a fossil-based DHC system. To avoid creating a decarbonisation bottleneck for DHC, such investments should be allowed despite the fossil nature of the existing installation.

4. **Introduce mandatory heat planning for cities**. Making heat planning mandatory will provide cities across Europe with the right tools and information to make the best use of their resources and be less dependent on energy imports. It is not news, that cities with proper heat plans in place, have often been identified heat networks as the most efficient and cost optimal options to achieve full decarbonisation, particularly in densely populated urban areas, due to their capacity to improve energy efficiency, reduce emissions and enable fuel flexibility.

5. **The Commission could highlight the role of taxation, in particular the role of reduced VAT that can support the connection of new DH customers – as allowed by Council Directive 2022/542.** On markets which are still very much dependent on individual gas boilers, such a tool could provide an extra boost to convince customers to switch to district heating.

6. **Dedicated envelop under Horizon 2020 for innovation in the heating sector.** Adequate funding through dedicated and specific calls and topics for renewable H&C is critical to develop future-proof district heating technologies. Specifically, there is a need for self-standing topics for the DHC sector (particularly for distribution infrastructure and cooling, that are missing).

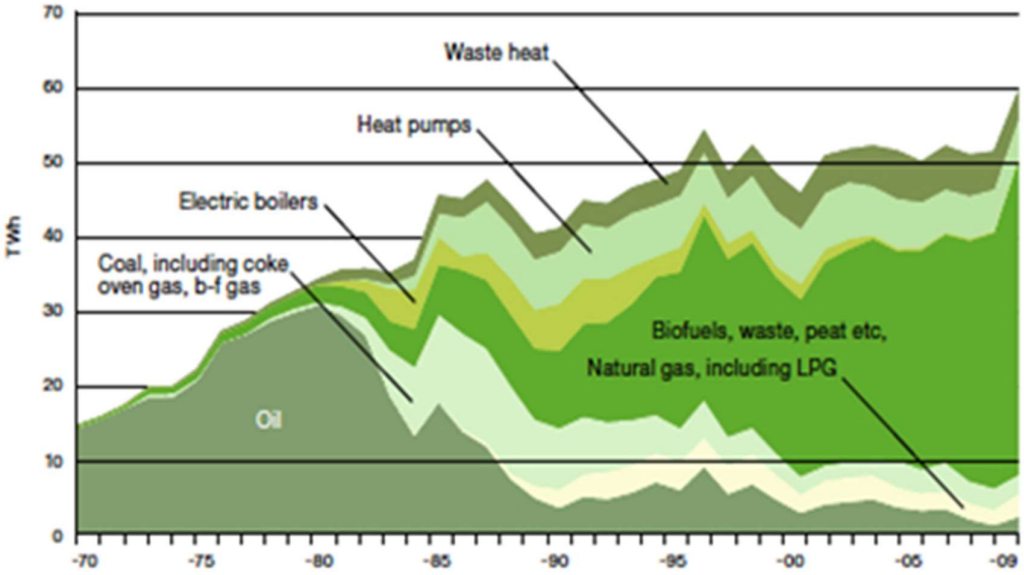
7. **Develop an integrated strategy to secure the provision of critical materials and train a skilled energy workforce**: As for several clean energy technologies, DHC supply chains have been affected by the pandemic. The ongoing conflict in Ukraine is also impacting the ore supply that is used to produce some

types of steel pipes. Similarly, the lack of qualified work force may limit the capacity of utilities to develop these projects.

20 years is a more appropriate timeframe to achieve the complete phase out of fossil fuels on the heating market.

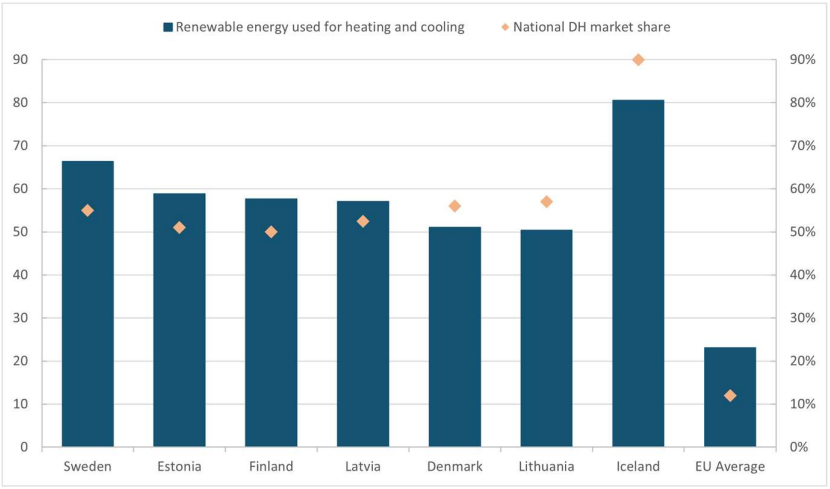
The focus of this paper is the contribution of our sector on the mid-term. As demonstrated by some countries (e.g. Nordics), a solid policy framework for sustainable district heating can phase out the use of imported fossil fuels thanks to the use of renewable and waste heat combined with efficiency measures. Austria is a recent example where policies have driven the uptake of renewable heating – evolution of the share of buildings connected to DH 2000-2019: +120 %. A full overview of the scale of the challenge, the necessary investment costs were provided in the above-quoted Heat Roadmap Europe project (2019).

Annex I: Evolution of the fuel mix in Swedish District Heating



Source: Statistics Sweden and the Swedish Energy Agency

Annex II: Correlation between the national shares of renewable heat (gross final energy consumption) and District Heating (market share)



Source Euroheat & Power and Eurostat, 2022

Annex III: Snapshot on two projects developed in 2 years

Greenfield development - Geothermal project in Arcueil /Gentilly (Paris region)

- Two-year project from City decision to energy supply (2013-2015)
- Project designed on 60% RES supply, with geothermal and heat pump replacing the average installation (fuel oil and natural gas individual heating)
- 15 MW capacity geothermal energy, supplying renewable heat to 10 000 households
- Secondary circuit optimisation: three-pipe areas allowing to use the return water from old buildings to supply new buildings (the latter require lower temperature)
- 120 substations and 16km infrastructure (supply and return pipes)

Conversion to sustainable biomass in Riga (Rigas BioEnergija Ltd.)

- Two-year project from planning to energy supply: 2015-2017
- Sustainable local wood chips replacing natural gas
- 48 MW capacity, supplying renewable heat to 25-30000 households

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