



The CELSIUS response to the Renewable Energy Directive (REDII)

The FP7-funded Smart Cities project CELSIUS (www.celsiuscity.eu) aims to facilitate the deployment of smart district heating and cooling systems across cities in the EU. It brings together excellence from 20 key partners along the value chain: cities, industries and leading universities in the partner cities Gothenburg, London, Genoa, Rotterdam and Cologne. In the hope of creating ripple effects across Europe, the project has committed 50 cities into the CELSIUS vision. The goal is to assist the new CELSIUS city members with practical information necessary for the development and maintenance of their DHC systems - including technical, social, economic and legal advice.

1. Overall assessment

The RED has indeed contributed positively to the development of national policies and support schemes to promote the development of renewable energy capacity across Europe but the activity in this Directive needs to be integrated with that of other Directives creating an integrated and coherent approach to reducing primary energy demand and greenhouse gas emissions so that each Directive contributes to part of a cost effective integrated energy system. The RED should be seen as part of the suite of Directives that together achieve the EU's energy and climate change objectives. These should not be seen as an end in themselves but as part of an integrated solution to reducing primary energy demand and greenhouse gas emissions. Its impact has been greater in some countries than in others as would be expected due to the range of factors that affect each Member State, including existing energy generation regimes, distribution networks and availability of appropriate natural resources. In the case of Sweden, for instance, the national ambitions far exceed those of the directive. Other factors can impact adversely on the roll-out of renewable technologies, for example it can be argued that the main barrier to the introduction of advanced biofuels in the Swedish transport sector is the current EU state aid rules. This highlights the need for stable policies and support schemes to bring new innovative technologies, such as advanced biofuels, through to market and this needs acknowledgement in State Aid guidelines.

A general concern is that RED, including in this consultation, focuses too much on electricity and not enough on heat and their beneficial integration within the energy system as a whole. We believe that there needs to be a more integrated approach to the energy system, where heating and cooling is considered as a central part alongside electricity. After all, heating and cooling represents just under half of the EU's energy demand. As a result of this bias, the RED can sometimes contradict the EU's energy efficiency objectives or encourage the generation of electricity when low and zero solutions for heat are actually required. For instance, policies



promoting renewable electricity may impact on the business case for efficient cost effective CHP, for instance through its impact on wholesale electricity prices. It is really important that we consider the efficiency of the energy system as a whole, the integration of heat and electricity networks and our ultimate goal of reducing primary energy demand and greenhouse gas emissions when we design these Directives and their resulting policy instruments.

There is enough waste heat produced in the EU to meet the heat demand of its entire building stock. In the context of this and the EU's overall goal of reducing primary energy demand and greenhouse gases, the ability of district heating systems, utilising waste heat sources, to make a significant contribution to this needs to be encouraged. The EU should look at how it can redefine the definition of 'waste' heat: sources include power stations, waste water treatment plants, sewerage systems, building cooling systems and metro tunnels; to give it equivalent or similar status to 'renewable' heat so that it can be integrated into this directive. This would provide real encouragement for heat network operators and waste heat producers to work together to look at the viability of making use of these waste heat sources to supply heat to local buildings.

1.1 How should stability, transparency and predictability for investors be ensured with a view to achieving the at least 27% renewable energy target at EU level?

It is important that we see a development of RES in the entire union and not only in a few climatically favourable locations as it is important for local security of supply and also has a positive influence on the local economy. District heating systems can play an important part in this as the inherent storage capacity that they have allows greater integration of intermittent renewables into the energy system as the district heat networks can support grid balancing and storage of surplus electricity in the form of heat. Renewable and waste heat should also play an important role in this development. To achieve this it is important to allow member states some flexibility while still providing strategic guidance, fostering regional cooperation and having mutually supportive Directives to avoid conflicting approaches and policies.

Striking a balance between providing security for investors and flexibility for policy makers is often difficult but long term trajectories, out to 2050, are a good way of providing certainty around the general direction of travel without limiting opportunities to adapt and evolve policies during that journey.

1.2 Member States' national energy and climate plans with respect to renewable energy in ensuring that the plans contribute to reaching the objectives of at least 27% in 2030.

National plans should focus on developing policies to achieve the 2050 objective of cutting emissions by 80-90%. Plans should consider energy efficiency alongside RES in order to achieve the most cost effective decarbonisation at a neighbourhood, district or city level. A good starting point for this is obviously the EED art 14, where the potential for DHC, CHP and the potential of recoverable or waste heat is identified. It is particularly important that these national plans work

towards an integrated energy system, establishing clear links between heating and cooling, electricity, distribution infrastructure and other elements of the energy system.

District energy systems are not only very carbon and cost effective, in urban environments with high heat densities, but they also support the integration of intermittent renewable technologies and enable the exploitation of available renewable, environmental and waste heat sources available in a city. This allows district heating systems to make significant contributions to energy efficiency at a city level and a low carbon integrated energy system that directly reduces greenhouse gas emissions and primary energy demand. The RED should explore all available options for how it can positively encourage organisations that emit waste heat as bi-product of their activities to actively seek to make that heat available to consumers either directly or through a district heating network.

As part of this activity the EU Emissions Trading Scheme should be reviewed to assess how it is and could be used to actively encourage the use of waste heat to help meet heating demand, this could include assigning an actual financial value to waste heat.

This process should also assess the opportunity to assign waste heat the same or similar status as renewable energy due to its ability, when integrated into district heating networks, to also directly reduce greenhouse gases and primary energy demand which is the overarching aim of the EU's Climate Policies and this Directive.

1.3 What should be the geographical scope of support schemes, if and when needed, in order to drive the achievement of the 2030 target in a cost-effective way?

No matter how desirable it may be to have fully EU-wide harmonised EU-wide support schemes, we must acknowledge that is very difficult in the short to medium-term due to , considering how the very different the market conditions and the regulatory frameworks that exist today are in the different member states.

In terms of EU support for District Heating and Cooling systems will be increasingly based on renewable and waste heat sources as they continue to decarbonise heat supply and support the electricity network through supporting grid balancing and greater integration of intermittent renewable energy sources. Consequently, we would like to see the following support schemes for district heating and cooling networks:

- An investment mechanism or fund that recognises the inherent risk profile of district energy projects, high in their development and early operational stages and dropping off as consumers are signed up. This would be able to provide long-term flexible capital, up to 15-20 years, that would catalyse delivery of district energy projects and triggering private sector investment in them and associated renewable energy technologies.
- Explore opportunities for creating or enabling the establishment of a dedicated Project Development Funding Stream or Programme, similar to the EIB's ELENA programme, that allows cities to assemble the specialist technical, financial and commercial support that they need

to develop a pipeline of commercially viable projects that they can then seek funding for from public or private sector investors. This will allow the role of renewable energy to be emphasised in project development and will ensure that these technologies form an integral part of future district energy projects

2. Decarbonising the heating and cooling sector

2.1 Barriers hampering the deployment of renewable heating and cooling in the EU

2.1.1 Waste heat

District heating and cooling networks combined with the utilisation of local waste and renewable heat sources have an important role to play in enabling the evolution of secure, low carbon and affordable energy systems that reduce demand for primary energy and improve local air quality. This includes the role heat networks can play in grid balancing and integrating intermittent renewable energy generation through their ability to store electrical energy in the form of heat. This is relevant at a micro-grid level as well as at a distribution network level. Just as in REDI, it is important that the REDII continues to allow for synergies to be made between recoverable excess heat and RES in order to ensure the roll out of low-carbon heating at the cheapest costs. For instance, in Germany, the use of efficient DHC & CHP is considered as an equivalent measure to RES, which has boosted efficient heating and the exploitation of recoverable heat. Another example is Sweden where most of the DHC systems are based on 90% industrial waste heat, CHP (promoted by the EED) and renewable energy sources – mostly biomass - (supported by the RED). It would be counter productive for the REDII to stipulate that such systems should replace waste heat sources with renewables. This would increase unnecessary primary energy consumption – and be in conflict with EED art 14. It would also challenge the rationale of the circular economy package. It is therefore important that the Commission explores all available options for positively encouraging organisations that emit waste heat to actively seek to make that heat available to consumers either directly or through a district heating network. This process should also assess the opportunity to assign waste heat the same status as renewable energy due to its ability, when integrated into district heating networks, to also directly reduce greenhouse gases and primary energy demand which is the overarching aim of this strategy

2.1.2 The discrimination against nearby production

Regarding the current EPBD review, it is important that the local production of renewable energy is not discriminated against by the onsite production of it. The implementation of the current directive has favoured onsite production in a discriminatory way. For instance, Delegated Regulation 244/2012 states that energy produced onsite shall be deducted from the primary energy demand and delivered energy which means that wind and solar power produced onsite can be excluded from the energy performance calculations. Energy coming from nearby production, for instance from a district energy system, is on the other hand fully accounted for even if the heat source is recoverable heat and no new primary energy has been used at all. This bias towards onsite production will lead to much greater electrification of the heating sector. This is worrying, as rather electricity should be utilised for purposes other than heating our homes.

2.1.3 No price signal on CO2 for small boilers

The entire heating sector should furthermore be subject to an equivalent carbon price signal. Today, production plants that form part of district or citywide heating systems fall under the scope of the EU Emission Trading System (ETS) as their installations in most cases have a capacity of over 20MW, whereas there is no corresponding price signal on carbon for smaller boilers. This is remarkable considering that the large bulk of EU's heating demand is supplied by millions of small boilers burning oil and gas.

2.1.4 Means of addressing these barriers and advancing the decarbonisation of EU heating and cooling supply

It is important that we leave flexibility for member states to choose a variety of policy instruments to achieve the RES targets and not place obligations on utilities, as this reduces the flexibility for member states. We need to find the right balance between the EU level (objectives, definitions) and the required national policy measures to achieve those. From our CELSIUS city network perspectives, we have a few examples of measures that have worked well to achieve the targets of the current directive:

- The Swedish CO2 tax has helped decarbonise the heating sector
- The German flexible approach where the requirements for RES can be met with efficient CHP/DHC
- The French investment aid provided by the Heat Fund

Again, it is crucial that the Commission proposes an approach that drives cost effective solution and maximises reductions in GHG and primary energy demand so that district energy solutions can compete fairly with building level heating and cooling solutions. In the definitions of NZEB, it is crucial that also other forms of low carbon heat, such as recovered heat, is considered an alternative measure.

