



Clean Energy for All Europeans The EU's Clean Energy Package - November 2016

A CELSIUS Perspective

**CELSIUS City partners: Gothenburg, Cologne, Genoa, Rotterdam,
London and Islington Council**

The 'Clean Energy for All Europeans' Package

In November 2016 the European Commission proposed a package of measures to keep the European Union competitive as the clean energy transition is delivered and changes global energy markets.

The Commission wants the EU to lead and shape the clean energy transition. Consequently the EU has committed to reduce carbon dioxide emissions by at least 40% by 2030 whilst modernising the EU's economy and creating jobs and growth for the benefit of all Europeans. The package has three main goals: putting energy efficiency first, achieving global leadership in renewable energies and providing a fair deal for consumers.

The package covers: energy efficiency, renewable energy, the design of the electricity market, security of electricity supply and governance rules for the Energy Union. It also proposes a new way forward for eco-design and a strategy for connected and automated mobility.

Within this package there is recognition of the role that heating and cooling, at a system and building level, has to play in the clean energy transition and importantly waste heat and cold is now included in the Renewable Energy Directive.

The CELSIUS Perspective

The CELSIUS project welcomes the Clean Energy Package and the leadership the EU are showing in the area of energy and climate change. We are encouraged by the increasing recognition that district heating and cooling networks are getting within the context of developing integrated energy systems that will deliver a cost effective clean energy transition.

Each of our five partner cities: Gothenburg, Cologne, Genoa, London and Islington Council, and Rotterdam; have ambitious climate and energy goals. District heating and cooling networks using renewable and secondary energy sources will have an important part to play in achieving those goals. We also have over 60 member cities from across the EU that are also developing district heating and cooling networks as part of their approach to decarbonising their city.

We believe that district heating and cooling networks using heat from renewable and secondary energy sources, deployed where there is sufficient heat density, have a very important part to play in realising the ambitions of the 'Clean Energy for All Europeans' package.



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Energy Efficiency and Energy Performance in Buildings Directives

Overview

We agree with the 'efficiency first' principle as an effective way of reducing primary energy demand and greenhouse gas emissions but believe it needs to be applied across the whole energy system and not just at the building level. This encourages not only reduction in primary energy demand from direct energy efficiency savings at a building level but also at a system level because it encourages the effective use and re-use of secondary energy sources, environmental and waste heat, through district heating and cooling systems. This approach supports a more integrated energy system where the building forms part of the overall energy system.

This would give city authorities the flexibility to reduce primary energy demand and greenhouse gases in the most cost-effective way, by using a combination of building and system level solutions that optimises the effective use of available secondary energy sources.

- CELSIUS is actively promoting the use and re-use of available secondary energy sources in district heating networks, often in conjunction with heat pumps, as an effective use of energy and an important contribution to system-level energy efficiency because this directly reduces a city's primary energy demand and consequently its greenhouse gas emissions.
- Secondary energy can be divided into two sources: heat that exists naturally in the environment: air, ground and water; and waste heat arising as a by-product of industrial and commercial activities which includes high temperature industrial and power station sources and lower-temperature sources such as data centres, supermarkets, sewerage systems, sewage treatment works and underground transport systems.

We believe that a building's energy performance should be based on its actual energy demand and only once this has been optimised from an energy and cost perspective should supply measures contribute to further decarbonisation. We believe that energy from secondary and/or renewable sources should then be permitted from either on-site building-level or off-site system-level solutions to further decarbonise the building.

These Directives should work together along with the Renewable Energy Directive to encourage an approach that pursues energy efficiency and decarbonisation of energy supply measures simultaneously to deliver the most cost and carbon efficient solutions for decarbonising our building stock.

The revised Directives should:

Treat buildings as part of the energy system: The current energy efficiency focus on buildings is welcome but they need to be looked at in the context of the overall energy system allowing primary energy savings to be made at both the system and building level. This will allow district heating and cooling networks, utilising secondary energy sources, to play a full part in providing the most cost effective solution for decarbonising buildings. (EPBD Article 2a)



An overall target for reductions in primary energy demand: It is important that a target and a harmonised methodology for calculating reductions in primary energy demand from both building and system level solutions is created. There needs to be recognition not only of the amount of energy delivered but also how that energy is produced or if secondary energy sources have been exploited. This will allow district heating systems using and re-using local secondary energy sources to compete with small-scale building-level heating technologies when developing cost and carbon optimum solutions. (EPBD Annex 1)

A voluntary approach to metering that supports efficiency at both a building and system level: CELSIUS welcomes the empowerment of consumers to make conscious choices about their energy consumption, as well as the Commission's focus on combating energy poverty. However, mandatory individual metering and billing for thermal energy runs the risk of creating unintended consequences for both consumers and energy efficiency that are contrary to the aim of the proposal.

In the case of district heating networks it is important that where individual metering is deployed it does not adversely impact on the overall heating strategy for buildings, specifically multi-family buildings/flats, or the performance of the heat network itself as this could actually increase energy costs for consumers. This situation is particularly relevant in countries with mature district heating markets and where they have established alternative approaches that ensure the consumer gets a fair deal whilst being able to optimise the operational efficiency of the network.

In addition, individual metering and billing in multi-family dwellings can reduce the incentive of building owners to undertake other energy saving measures that have been identified in these Directives because they are no longer responsible for the heating costs of the building. In many countries the cost of heating supplied by heat networks is included in the rent and is used as an effective way of helping to address fuel poverty.

Therefore we believe that EU metering requirements should remain voluntary to take into account situations where there is a good commercial or operational reason as to why individual billing should not be required. (EED Articles 9 & 10)

Equal treatment of both renewable and secondary energy sources whether on-site or off-site: Once the building's energy efficiency measures have been undertaken then any further savings established from energy supply should treat on-site and off-site renewable and secondary energy solutions equally. The value to greenhouse gas reduction and consequently climate change is the same but it allows the cost optimum solution to be identified and implemented.

We welcome the change that has been made to the EPBD to treat on-site and off-site renewables equally but would like to see a similar change in the EED to ensure this consistency of approach is applied across both Directives. (EED Articles 2 & 7 and EPBD Annex 1)

Renewable Energy Directive

Overview

We welcome the inclusion of waste heat and cold within the Renewable Energy Directive and the fact it explicitly highlights the potential of district heating and cooling networks



along with waste heat and cold, aligning it with previous policies such as the EU Strategy for Heating and Cooling, to support cost effective reductions in primary energy demand and greenhouse gas emissions.

District heating and cooling networks, with large-scale heat pumps and thermal stores, provide an important part in the future integrated energy system by not only enabling the exploitation of waste heat and cold but by accelerating the integration of greater levels of intermittent renewable energy generation by providing grid balancing capabilities and storage capacity for surplus electrical energy in the form of heat.

We believe that by creating opportunities for district heating and cooling networks within this Directive and the Package more widely, the EU will provide the ideal framework within which it can make a cost effective transition to a more competitive, modern and cleaner energy system.

The revised Directive should:

Give greater recognition to the role of district energy and waste heat sources in creating an integrated energy system as part of the energy transition: Cities welcome the new emphasis on decarbonising heating and cooling systems by encouraging the uptake of renewable energy and now waste heat and cold sources too. However we believe there needs to be a greater recognition of and support for the role that district heating and cooling networks can play in the transition to an integrated zero carbon energy system.

Give greater recognition to the value of waste heat and develop support mechanisms to encourage its use: The inclusion of waste heat and cold in the revised Renewable Energy Directive is very encouraging but we believe that it should be strengthened in the final version to actively promote the exploitation and re-use of this resource. Greater explanation of the opportunity that it offers and emphasis of the role it can play in reducing greenhouse gas emissions and primary energy demand would be particularly valuable.

This should then be complimented by the proposal of support mechanisms that would actively encourage the producers of waste heat to make their heat available to adjacent buildings or local district heating and cooling networks. For example, waste heat and cold could be treated in a similar way to renewable energy in the articles of the Renewable Energy Directive that are designed to reduce the use of fossil fuels in energy supply systems, including for district heating and cooling systems. Another option is to assign an actual value to waste heat and cold through the EU Emissions Trading Scheme to encourage its use and re-use in heating and cooling networks.

Treat waste heat and cold in a similar way to renewable energy: We believe that to optimise the use of this invaluable and potentially free resource, and realise its contribution to the Clean Energy Package, references to waste heat and cold should be added to all articles involving renewable energy for heating and cooling within the Directive. (Including Articles: 15(5), 20(3), 23, 24(1))

Broaden the definition of waste heat and cold: It is much more than just heat or cold generated from industrial activity or power generation, it includes any type of secondary heat or cold originating from either anthropogenic or natural sources, such as data centres, supermarkets, sewerage systems, hydrothermal or geothermal. (Article 2)



Waste heat and cold can originate from a diverse range of sources, both natural and anthropogenic, and consequently have varying carbon intensities. Some of those will be from fossil fuels, such as industrial sources, but many will be from system operations powered by electricity that will be made up of increasing proportions of renewables over the coming years, such as data centres and supermarkets, and others will be from infrastructure systems such as transport, energy, sewerage and waste. This needs to be recognised in the definition of waste heat and cold, in how their carbon content is calculated and also in how the various sources are supported within the Directive.

Fossil fuel based waste heat and cold sources provide important energy sources that should be used and re-used in an integrated energy system to make the most effective use of that energy source. These heat sources can play an important part in the development and expansion of district heating and cooling networks over the short to medium term but may not provide a long-term heat supply option as fossil fuel activities are phased out and these networks become zero carbon over time.

Reinstate the reference to district heating and cooling in the text of the article on the use of renewable energy in new buildings and major renovations: The reference to district heating and cooling has been removed from the revised proposal on minimum levels of renewable energy use in the case of new buildings and major renovations. This reference should be reinstated in order to make clear that the renewable energy requirements can be met with renewable or waste heat and cold delivered through district heating and cooling networks, and not solely from on-site sources. This will then re-align it with the EPBD and EED. (Article 15)

Clarify the proposal on guarantees of origin before taking a decision: It is unclear what is intended by connecting guarantees of origin to financial support schemes, and this should be further clarified before a decision is taken. As the proposal could cause a major upheaval in the market for guarantees of origin, care should be taken before binding measures are instituted. (Article 19)

Mainstream renewable energy and waste heat and cold in district heating and cooling installations: It is also important recovered and recycled energy, such as waste heat, is treated similarly to renewable energy here, as otherwise the requirement for increased renewable energy could reduce the use of waste heat and cold and therefore by reducing the use and re-use of available energy sources it will increase the need for energy generation to meet this demand. (Article 23)

Remove or modify the proposal to give full third party access to district heating networks: The possibility has been investigated several times in Sweden and Germany and has been deemed not to deliver the desired effects, particularly with regard to increased competition and better prices for consumers. However, heat networks will benefit from a diverse range of heat sources and it should be emphasised that the absence of full third party access does not prevent mechanisms being developed for reasonable and equitable payment for renewable energy and waste heat and cold being supplied, at the appropriate technical specifications, to the heating and cooling network. (Article 24)

