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# COGEN Europe Response

## Inception Roadmap on "Strategy for long-term EU greenhouse gas emissions reductions"

Brussels, 10/08/2018

In the context of the Paris Agreement, the EU has set ambitious energy and climate change objectives to ensure that Europe relies on secure, affordable and climate-friendly energy. The cogeneration sector is committed to the creation of a resilient, decentralised and carbon neutral European energy system by 2050 with cogeneration as its backbone, empowering European citizens and industry to generate their own efficient, reliable and affordable clean heat and power locally.

The EU's 2030 climate and energy framework, currently taking shape, has reaffirmed Europe's commitment to implementing energy efficiency first, to putting consumers at the centre and cementing Europe's leadership in renewable energy, all while reducing CO2 and boosting competitiveness and growth. Moving beyond 2030, EU's Strategy for long-term EU greenhouse gas emissions reductions should:

- continue to put energy efficiency first by prioritising primary energy savings across the entire energy value chain and all energy sources;

- take an integrated approach to the energy system, promoting a mix of decarbonisation solutions across the key energy infrastructures (i.e. electricity, heating & cooling and gas). Europe's long-term decarbonisation strategy should avoid taking a silo approach (e.g. decarbonisation through electrification alone), in order to deliver cost-effective carbon reductions for all energy consumers and the economy as a whole. In this respect, addressing ETS and non-ETS sector silos should also be prioritised to ensure that solutions like CHP are not disadvantaged, as they compete with less efficient generation under both ETS and non-ETS at the same time;

- account for the contribution of different energy consumers to the decarbonisation of the economy, empowering them to reduce CO2 at the lowest cost, while ensuring security of their heat and power supply

- pay special attention to the cost-effective decarbonisation of heat in buildings, SMEs and industry, accounting for the different ways in which heat is produced & consumed (e.g. different heat temperatures);

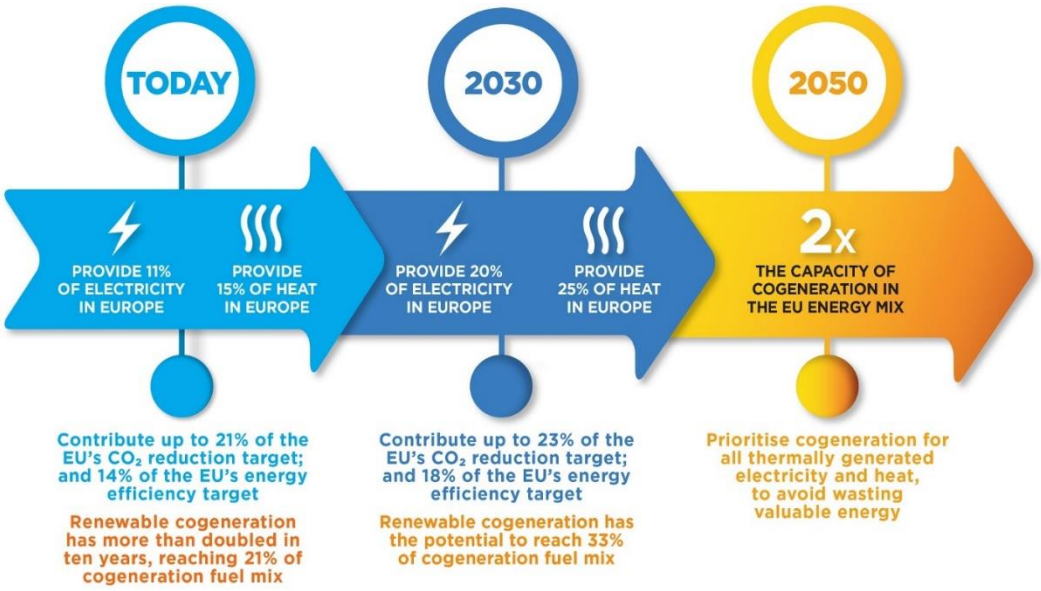
- develop a framework that fosters investment security for both solution providers and energy consumers. Retroactive changes to support schemes and in the regulatory frameworks at national levels have delayed in recent years important investments in CHP and other sustainable energy projects, aimed at improving the efficiency and reducing industry's carbon

intensity. A stable and predictable policy environment is needed to ensure that necessary investments are made proactively and as part of a comprehensive decarbonisation pathway.

Today cogeneration efficiently generates 11% of EU's electricity and 15% of its heat, reducing $CO_2$ by more than 200 million tons. Cogeneration is used in many key European industries (i.e. pulp and paper, alumina, chemicals, ceramics, glass, textiles, food & drink). Across Europe, 90 million European households enjoy local electricity and efficient heating & hot water thanks to cogeneration, via their district heating network. Over 100,000 active energy consumers like homes, hospitals and SMEs already self-generate their heat and power with on-site cogeneration, including via fuel cell micro-cogeneration.

By 2030, realising the cogeneration potential identified by Member States (equivalent to a doubling of generated electricity from CHP) would secure an additional reduction of 200-300 million tons of CO2[1], contributing up to 23% of the 2030 GHG emissions target.

**Beyond 2030, cogeneration should be prioritised for all thermal generation of heat and electricity, avoiding the waste of valuable resources.** A doubling of cogeneration capacity in the EU energy mix by 2050 will complement the increasing share of intermittent renewable energy sources, thus ensuring system efficiency and reliability, as well as consumer empowerment.




[1] COGEN Europe calculations based on Eurostat, CODE2 & Member States' Article 14 EED notifications

As the energy system decarbonises, energy efficiency should remain a "no regrets" option. A comprehensive implementation of energy efficiency across the entire energy value chain will be needed for a cost-effective and resource-efficient energy transition:

- Efficient supply: The most efficient energy conversion solutions should be prioritised, in particular high efficiency cogeneration over the separate production of heat and electricity

- Efficient grids: Decentralised and flexible energy production should be promoted as a way to reduce the need for costly electricity grid infrastructure.
- Efficient consumption: Comprehensive local level energy planning will ensure an optimum mix of demand reduction and efficient supply of energy across different sectors (e.g. buildings, industry, transport). In this respect, trade-offs between efficient generation and demand efficiency should be assessed from a decarbonisation and cost perspective.
- Renewable energy with (not instead of) energy efficiency: To ensure cost-effective decarbonisation, the increasing share of renewable energy consumption should not preclude the efficient production and use of all energy sources, including thermal renewables (e.g. solar, geothermal, biomass, biogas, hydrogen).
- Prioritise primary energy savings in addition to final energy reductions: This will address the significant energy losses and emissions associated with inefficient combustion of fuels. Currently up to 50% of electricity comes from non-combustible renewable energy or from high efficiency cogeneration, meaning that more than 50% of electricity production is associated with significant energy losses in the form of heat dispensed into the atmosphere. Applying more stringent efficiency standards on combustion-based generation, both using conventional and renewable sources, will be a source of early and continued emission mitigation.

**Taking an integrated approach to the energy systems**

The decarbonisation of the economy will require significant efforts in all sectors. The burden of decarbonisation should not be put on one sector only, like it is the case in the full electrification scenarios. Taking an integrated approach to energy planning and energy systems operation will ensure that synergies can be unlocked between different energy infrastructures (i.e. electricity, gas, heat networks) and across sectors (e.g. industry, agriculture, transport) at different levels (local, regional, national and EU). It is key that the mix of decarbonisation solutions, including energy efficiency, is diversified and optimised across all energy systems, accounting for all energy system costs (e.g. power grid reinforcements, seasonal storage).

In addition, technologies that can provide flexibility between several energy systems, like it is the case for cogeneration, should be better recognised for their benefits.

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**Putting Energy Consumers at the Centre**

Energy consumers interact with the energy system as a whole, driven by their specific needs, and do not focus on generation or demand, heat, power or gas in silos. To engage consumers, policy should take a comprehensive perspective and break the silos between energy conversion, transmission, distribution and consumption, as well as harness synergies between different energy networks (electricity, gas, heat), fostering consumer choice between different sustainable energy solutions.

Europe's decarbonisation strategy should account for the diverse profiles of energy consumers: domestic, SMEs and industry. Depending on their specific needs, energy consumers can contribute differently towards a decarbonised energy system.

Being user-led, cogeneration is a local and efficient solution, having a huge potential to enable an increasingly distributed, integrated and sustainable energy system.

**Accounting for the decarbonisation of heat**

Heat consumption represents more than 50% of energy needs across Europe and is responsible for a high share of energy costs for both domestic and commercial consumers. The decarbonisation of the economy will not be achieved without a comprehensive strategy on heat.

Dedicated approaches should be taken for different types of heat needs:

- Heating for domestic and small commercial consumers is seasonal. Even with high insulation rates resulting in more than 50% energy reduction in the building sector, peak

heat demand is expected to be twice as high as electricity demand today (add Heat Roadmap Europe reference). Fully electrifying this sector faces a series of challenges: high seasonality of demand, availability of decarbonised electricity in the medium term, seasonal storage of renewable electricity and cost of reinforcing the grids to sustain a doubling of electricity demand in winter

- Hot water demand, requiring higher temperatures than for space heating, is somewhat constant throughout the year and will remain at least at the same levels as today

- Steam consumption in industry accounts for approximately 20-30% of energy consumption and is generally subject to high efficiency standards already. Electrification of industrial heat consumption has been identified as a potential decarbonisation solution. However, this shift would entail not only significant grid reinforcements to ensure continuous energy supply but also costly industrial re-conversion. Therefore, decarbonisation of steam demand in industry should account for the cost of capital investments, operations and ensuring security/reliability of heat and electricity supply.

- Cooling demand is expected to increase and so it deserves special attention as well.

Heating & cooling is a complex and diverse sector which requires a balanced approach. Tackling the decarbonisation of heat will involve: supply side energy efficiency (e.g. industrial cogeneration, micro-cogeneration, cogeneration with district heating) to complement demand efficiency (insulation of the building stock where possible), as well as dispatchable renewable or low carbon energy sources. In addition, the cost-effective potential of all types of storage should be identified and promoted, including heat storage and the seasonal storage of renewable energy via the gas network.

**Conclusion**

The cogeneration sector is committed to the creation of a resilient, decentralised and carbon neutral European energy system by 2050 with cogeneration as its backbone. As an efficient, consumer-led, fuel-flexible, systems integrating solution, cogeneration will be key in delivering Europe's long-term decarbonisation objectives.

Europe's long-term climate strategy should aim for the decarbonisation of the economy, opening growth opportunities for decentralised, efficient and smart energy solutions and taking an integrated approach to energy across electricity, gas and heat networks.

Contact persons:

alexandra.tudoroiu@cogeneurope.eu

francois.paquet@cogeneurope.eu

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