Prioritising the use of high-efficiency cogeneration by industrial operators to reach 2030 climate goals

Joint statement

Brussels, 2 March 2022

The Fit for 55 package must safeguard industrial users' incentives to operate on-site high-efficiency cogeneration (CHP). The signatories call on the European Parliament and Member States to support the contribution of high-efficiency CHP to the EU's climate goals. By prioritising high-efficiency on-site cogeneration over less efficient power-only and heat-only generation, even greater carbon emission reductions and further energy efficiency gains can be achieved as clean energy sources become widely available at a competitive price.

Up to 70% of industrial energy demand consists of medium and high temperature process heat, most of which cannot be electrified either due to cost or technical constraints. Many industries use CHP to reduce energy consumption and emissions at lowest cost, considering their combined heat and power needs, as well as the availability and affordability of on-site and grid energy sources. Cogeneration is a best available solution for key manufacturing applications such as melting, drying, sterilising, cooking, process heat, or managing industrial gases.

Today, 60 GWe of high-efficiency cogeneration is installed on-site across key industries[1]. Industrial auto-producers cogenerate 192.5 TWh of electricity, equivalent to the total electricity produced in the Netherlands and Belgium combined[2]. Industrial CHP saves around 20 Mtoe of energy across Europe, which represents 5% of the 2020 energy efficiency target. This helps reduce up to 40 million tonnes CO_2 yearly Europe-wide, which is equivalent to the emissions of 30 million petrol cars.

The signatories fully support the new 2030 climate targets and the objective to reach climate neutrality by 2050. For the European Union and its Member States to stay competitive in the global market and to cost-effectively meet the EU's more ambitious decarbonisation objectives, the essential European industries require secure access to clean and affordable heat and power. Therefore, the use of CHP by industrial operators should be encouraged. Cogeneration makes an important contribution to climate, environmental and resource protection.

Cogeneration is an extremely valuable future-proof energy efficiency solution in and of itself with a key role to play on the path to carbon neutrality[3]. Its contributions to the overall EU energy system

[1] COGEN Europe estimates based on Eurostat CHP statistics (2021)
[2] Energy Balances (2021) Eurostat
[3] The role of CHP in 2050 (2020) Artelys

and to the industrial ecosystems include energy security (i.e., on-site own production and consumption of energy), energy system integration (i.e., demand-side flexibility), circular use of energy within system boundaries, and as an alternative to carbon intensive energy.

For these reasons, the reformed EU 2030 climate and energy policy framework should prioritise high-efficiency cogeneration. At the core of the policy framework to incentivise industrial CHP operators is **the Energy Efficiency Directive (EED), which must prioritise the use of CHP to:**

1. **Ensure continuous emission reduction of the entire European energy system**
   On-site CHP brings energy, cost and emission savings for both the industrial consumer and the energy system as a whole. The industrial users of high-efficiency CHP need to be able to maintain the flexibility to optimise their equipment for electricity or heat generation to best serve their production needs. The flexible operation and decentralised nature of CHP plants also make them versatile and useful for grid stability.

   Overly rigid criteria for high-efficiency cogeneration, such as the direct CO_2 emissions threshold or the restricted list of eligible fuels, could hinder the decarbonisation efforts and lead to unintended consequences:
   - *Reducing security of heat supply* – Industrial sites will have to resort to less efficient, often more carbon-intensive, heat-only generation to cover their existing heat demand. The stability of heat supply is fundamental for maintaining the sustainability and economic viability of several manufacturing industries
   - *Shift to the grid electricity* – Industry might be forced to shift from efficient on-site electricity production, in some industries already based to a large extent on renewable fuels, to purchasing more highly emitting and less efficient electricity from the grid. Consequently, such a move threatens to undermine efforts to reduce the EU's overall emissions.
   - *Higher energy costs* – The shift from on-site highly efficient generation to relying on grid supply might result in increasing energy costs for industry, which is already suffering from the energy price crisis. Higher demand for grid energy puts additional pressure on energy suppliers and further drives energy prices up.
   - *Lower grid stability and system integration* – The strict criteria might make it impossible for industrial CHP operators to take part in voluntary demand-side flexibility services. They will not be able to sell excess low-carbon electricity and (process or waste) heat to third parties, e.g. district heating and cooling. This would contradict the 2018 Renewable Energy Directive, which encourages Members State to foster industrial providers of (excess) heat to district heating and cooling to facilitate energy system integration.
   - *Aggravating system adequacy gaps* – Many countries have or will have a capacity deficit in coming years. The significant "behind the meter" capacity, provided by industrial CHP, passively supports system adequacy. Without the on-site CHPs, new gas-based power generation would have to be built to cover the missing dispatchable capacity. Such generation is bound by more lenient emissions criteria and no efficiency conditions.
   - *Lower production of low-carbon energy* – Industrial CHP operators, for example steel producers, will be disincentivised to self-generate low-carbon energy with so called process gases (also known as waste gases) originating from on-site production processes.

Consequently, additional external purchases of the currently available fuels (often with higher carbon intensity) would expose the industrial operators to higher energy costs, and lead to increasing on-site and system carbon emissions. Combustion of process gases should be excluded from the threshold.

2. **Complement the uptake and efficient use of renewable and low-carbon energy today and in the future**

   It is crucial for manufacturing industries, which require simultaneous production of electricity and heat, to continue relying on energy savings delivered by high efficiency CHP, across a range of energy sources as renewable energy becomes available and affordable.

   These energy savings achieved on-site must be recognised in the recast EED, especially given the value of distributed generation for power grid resilience and reducing power network losses compared to conventional generation. Industrial CHP operators are already today replacing inefficient equipment and investing in installations that are compatible with clean energy sources. Some sectors consider this as an essential part of their decarbonisation strategy. For example, in the sugar, pulp and paper industries, biogas produced on-site from waste and residues can be co-fired in high-efficiency CHP systems.

   The supply of renewable and low-carbon energy is steadily growing, but it will still be needed to be used smartly. The recast EED must ensure that investments made by the industry today can deliver energy efficiency also in the future as clean energy sources become gradually available at a competitive price.

3. **Capture the industry's real energy savings potential**

   During the transition, the energy savings achieved using CHP in industry should count towards Member States' energy efficiency obligations no matter their energy source. Already today energy savings achieved using CHP in industry make a significant contribution to lowering emissions throughout the EU. While industrial operators continue to decarbonise their production processes by improving energy efficiency and switching to clean energy sources, their efforts are often dependant on external factors.

   European industry has different starting points for their decarbonisation efforts. Yet the industrial operators are obliged to abide by stringent, unrealistic and horizontal standards despite the national situation. The available fuel mix, the efficiency and demands of local energy system, and the national plans for increasing the uptake of clean energy are completely outside the control of the industry.

Finally, the proposed revision of **the Energy Taxation Directive** will also have an impact on the future of the CHP operated by the industry. To ensure their contribution to reaching climate targets, the exemptions for both energy-intensive industry as well as the full and unequivocal exemption from an excise tax of all energy products and electricity used for CHP should be foreseen. This can further promote this very efficient technology.

Concluding, the use of CHP by industry is expected to facilitate the decarbonisation of heat. We call on the European Parliament and Member States to adopt measures that can secure the contribution of industrial CHP to reaching 2030 climate goals. Cogeneration technology must be prioritised to cut carbon emissions of industrial sites and connected sectors, to ensure efficient use of renewable energy and to reduce energy demands even beyond 2030. By 2050, high-efficiency CHP should remain a solution that enables efficiency, flexibility and systems integration.

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