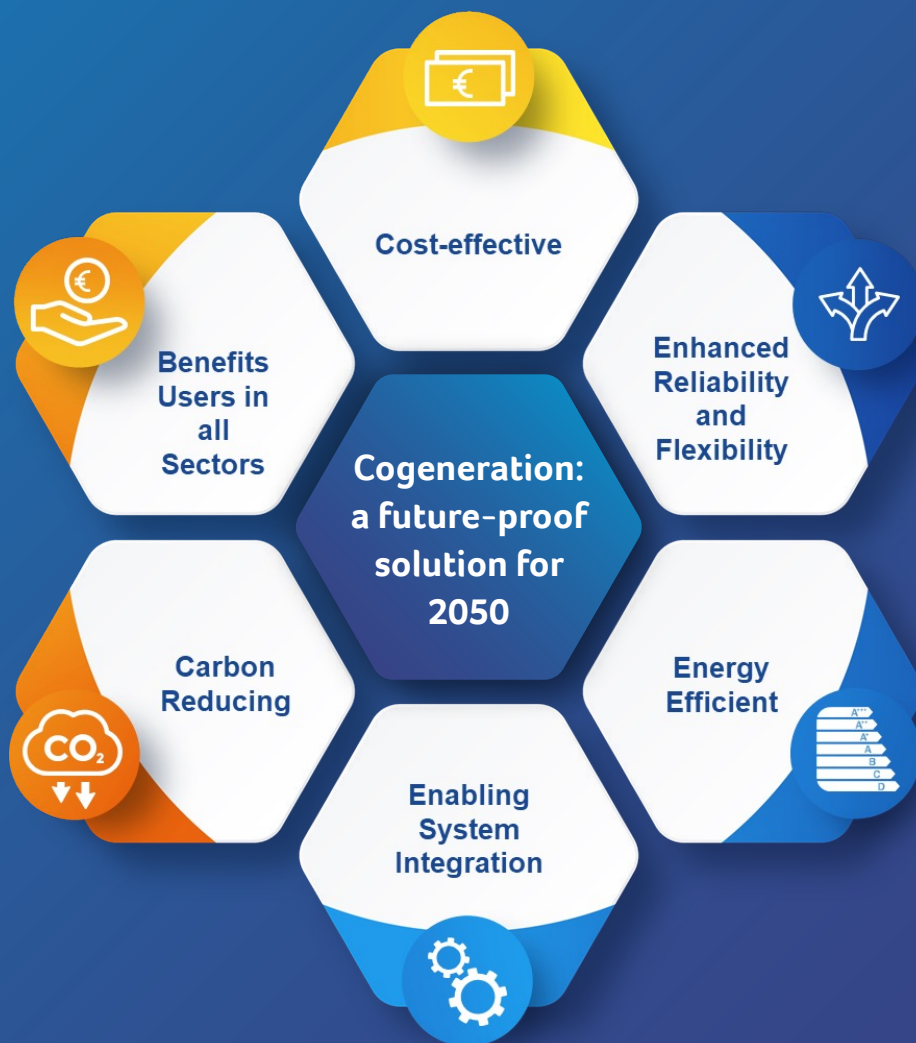





**COGEN
EUROPE**

The Role of Cogeneration in Europe's Energy Transition


Enabling an Efficient Pathway to Net Zero



July 2024



The next five years will be crucial for building a prosperous, competitive and sustainable Europe. Energy is vital for all Europeans and the economy. Our homes, schools, hospitals, businesses and industry need secure access to electricity and heat that are both affordable and clean.



The cleanest and cheapest energy is the energy one does not consume. Our planet, people and economy can no longer afford to waste energy. Energy efficiency is a prerequisite for Europe to deliver on the ambitious goals of the EU Green Deal, whilst tackling energy poverty and safeguarding our industries' competitiveness.

COGEN EUROPE calls upon the incoming European policymakers to support the development of an increasingly integrated, efficient, resilient, and decarbonised energy system that meets the needs of Europe's citizens, communities, businesses and industries. Cogeneration – as the most efficient and reliable way to thermally generate electricity and heat – is a core solution to fulfil this vision and support the implementation of an EU Green Deal that preserves industrial competitiveness and leaves no one behind.



Policy Priorities 2024-2029

1. A cost-effective approach to decarbonisation

1.1 Scale up all cost-effective decarbonisation solutions

One-size-fits-all solutions will ultimately lead to higher costs for citizens, businesses and governments. The European Union must protect energy consumers against soaring energy prices and supply disruptions, as it speeds up the deployment of net-zero solutions on the path to carbon neutrality by 2050.

- *Ambitious policies and financing are needed to scale up production and reduce costs for a diverse mix of low carbon and renewable energy sources, complemented by energy efficient technologies, energy storage and CCUS solutions, and investing in increasingly integrated electricity, heat and gas infrastructure.*
- *Decarbonisation pathways for 2040 and 2050 must take full advantage of energy system integration solutions, such as cogeneration and district heating and cooling (DHC), in order to maintain competitiveness and affordability alongside system resilience, and ensure the timely implementation of objectives.*

1.2 Act now on decarbonising heating and cooling at local level

Heat is needed in homes and buildings, as well as in industry. Heat, in the form of heating, cooling, hot water and industrial process heat, accounts for 50% of the energy consumed in Europe today. Most of this heat comes from inefficient technologies using fossil fuels, while a lot of energy is wasted at different stages of the energy value chain. Without a comprehensive, integrated and diversified approach to decarbonising heat there will be no decarbonisation of Europe's economy.

- *A dedicated EU Heating and Cooling Decarbonisation Plan is needed to deploy the most suitable energy efficient solutions, including cogeneration and power-to-heat technologies, to accompany the uptake of a diverse mix of renewable energy sources enabled by energy storage technologies across integrated electricity, gas and district heating networks.*
- *The EU's Heating and Cooling Decarbonisation Plan must explore innovative ways to finance heating and cooling decarbonisation, taking different national energy mixes and local circumstances into account.*

2. An energy-efficient Europe

2.1 Prioritise 'energy efficiency first' to reduce emissions and make the best use of renewable energy sources

There is still a huge untapped potential to efficiently supply energy (both electricity and heat) to consumers, when we know that more than 70% of thermal power production wastes 55% of energy inputs as heat released into the atmosphere. Additional energy is wasted as centrally produced electricity is transmitted over long distances and distributed to end users. Cogeneration ensures that more than 75% of primary energy is converted into useful power and heat that is produced locally and then consumed on-site or nearby, thus minimising conversion, transmission and distribution losses. However, cogeneration currently represents only 27% of thermal electricity generation in the EU.

- *Cogeneration should be prioritised for thermal power and heat generation, increasing the share of cogeneration in thermal electricity generation from 27% to at least 40% by 2040 and at least 50% by 2050, complementing the expansion of clean power from renewable sources.*
- *Prioritise the use of renewable gases, biomass and hydrogen in cogeneration, in order to make the most efficient use of these precious energy sources and maximise emission reductions.*

2.2 Foster energy savings across the entire energy value chain

Primary energy savings can be achieved by applying the 'energy efficiency first' principle across the entire energy value chain, encompassing cost-effective demand reductions alongside efficiency gains in energy generation, transmission and distribution. When only final energy savings are promoted, there is a high risk of achieving demand reductions by fostering industrial relocation (with industries migrating from EU Member States to less regulated countries) or shifting demand between energy vectors upstream.

- *Reward the more efficient use of primary energy and resources, as well as smarter ways to produce and/or consume energy.*

2.3 Move towards hybridisation and system efficiency

Due to the increasingly integrated nature of our energy systems, the impact of individual solutions or combinations of technologies must be assessed from an overall energy system perspective, rather than only looking at final consumption or at one energy vector in isolation.

- *Promote smart ways to produce, transport and consume energy, and combine efficient technologies with renewable energy sources and energy storage, in order to minimise energy losses and reduce the need for costly infrastructure investments.*

3. A resilient and flexible renewables-driven Europe

3.1 Take an integrated approach to energy systems across all energy vectors, to mitigate costs for consumers and the economy as a whole

As national and regional decarbonisation efforts intensify and consumer level actions multiply, investments in energy infrastructure become necessary to ensure energy security and resilience. Due to the diversity of Europe's economies and geographies, local circumstances will play a critical role in determining how each region will transition to a climate neutral energy system in the coming decades.

- *Foster the integrated planning and operation of energy systems at local level, enabling communities to take control over their own pathways to net zero emissions in the context of the EU Green Deal.*

3.2 Recognise the role of distributed generation capacity embedded across the European economy

Local heat and electricity generation embedded in districts, businesses and buildings already provides important benefits to the energy system, including energy savings, as well as reducing peak demand and cutting grid losses. With the expansion of intermittent renewable energy (e.g. wind and solar/PV) and increasing electrification of energy demand (e.g. heat pumps, electric vehicles), the value and importance of local dispatchable generation will grow.

- *Recognise the role and reward the value of cogeneration, as one of the most efficient solutions to safeguard power system adequacy and ensure cost-efficient balancing of supply and demand all year round.*

4. A prosperous Europe for citizens and industry

4.1 Empower citizens, communities and businesses to efficiently generate their own clean power and heat locally

Affordable, clean and secure energy is vital for improving citizens' living standards and for enabling businesses (including SMEs) and industry to thrive in a sustainably growing European economy. Locally integrated and efficient heat and power solutions, running on a range of increasingly low carbon and renewable fuels, are essential for delivering secure, clean and affordable energy for industry and citizens both now and in the future.

- *European and national policies should take fully into account the energy system benefits of on-site cogeneration, including primary energy savings, power system resiliency, renewable energy integration and emission reductions.*

5. A European Industrial Deal fostering Net-zero Leadership

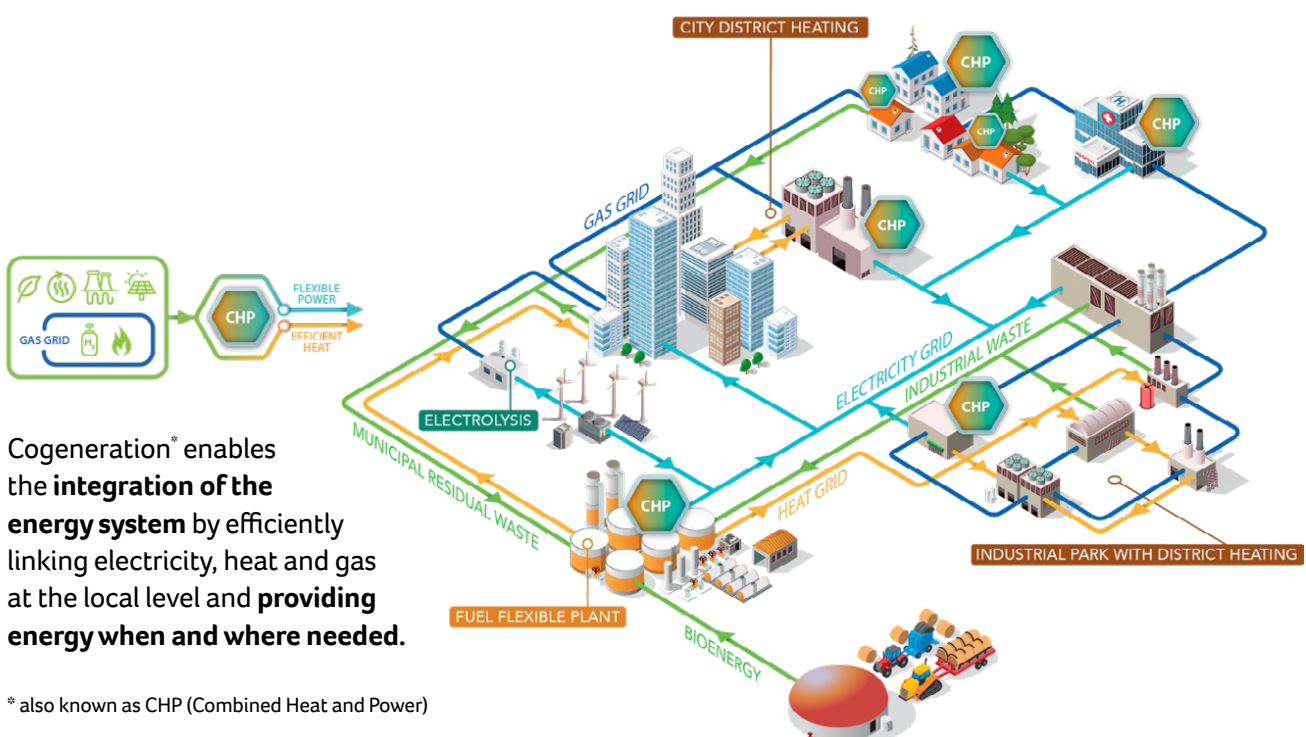
5.1 Support innovation and investments in proven energy efficiency and renewable energy solutions

Committed to boosting energy efficiency, fostering system resilience and accelerating the integration of renewable energy sources, the cogeneration sector currently has a strong manufacturing base in the EU. It is directly responsible for providing more than 100.000 highly skilled jobs and supporting supply chains embedded in local economies across Europe. Moreover, cogeneration is vital for boosting competitiveness and supporting clean growth in key industrial and economic sectors such as pulp and paper, chemical, alumina refining, food processing, ceramics, health, hospitality and many more.

- Focus on preserving and growing net-zero industries with a strong European footprint, in addition to reshoring the manufacturing of strategic net-zero technologies and providing faster and simpler permitting procedures.
- Generate demand for 'Made in Europe' net-zero technologies by supporting necessary investments by European industry, utilities and other energy users.

These priorities can provide the basis of an energy transition that benefits Europe's citizens, the EU economy and the climate. COGEN EUROPE calls upon newly elected Members of the European Parliament to support these priorities and commit to building a resilient, decentralised and carbon neutral energy system for a strong sustainable Europe.

Cogeneration: the backbone of local and integrated energy systems



* also known as CHP (Combined Heat and Power)

Cogeneration at the heart of European industry and communities

In the European Union:

- Cogeneration saves **356 TWh** of energy every year, equivalent to the total energy consumption of **23 million homes** or the **entire EU pulp & paper sector**¹.
- Cogeneration prevents approximately **200 million tonnes**² of CO₂ emissions every year, equivalent to the **fuel combustion emissions of Belgium and the Czech Republic combined**³.

Hassfurt (Germany)



- Stadtwerk Haßfurt uses cogeneration to generate heat and electricity from renewable biogas and green hydrogen (produced using clean electricity).
- Two cogeneration units supplied by 2G Energy run flexibly on biogas and up to 100% hydrogen, meeting the energy needs of businesses, schools and households via a district heating network.

Szlachęcín (Poland)



- A local energy system developed by Veolia integrates waste heat recovery, a large heat pump and a cogeneration facility to provide heat and electricity to businesses and households.
- The heat pump uses electricity from the cogeneration facility and recovers waste heat from a sewage treatment plant, thereby reducing CO₂ emissions by 2000 tonnes annually.

Brescia (Italy)



- Steelmaker ORI Martin captures excess heat from industrial processes to power an on-site cogeneration facility.
- The integrated system provides heat for 700 homes (via a district heating network) and electricity for 2000 homes in the local area.

Suchohrdly (Czechia)



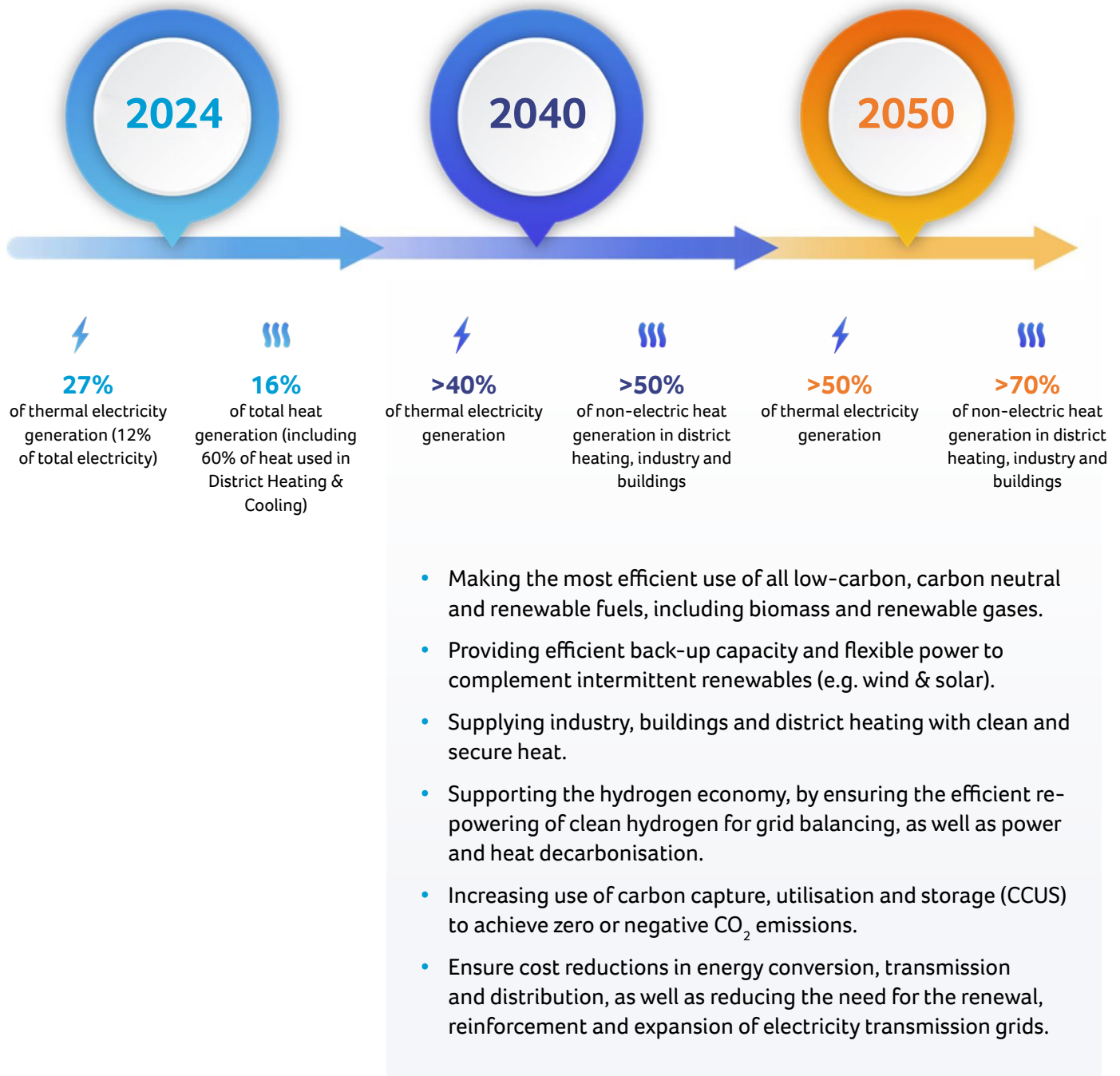
- A farm meets its own energy needs by producing biogas from pig manure combined with waste from a sugar mill and other plants.
- The biogas is used to fuel 5 TEDOM cogeneration units, which provide both electricity and heat for the farm and an adjacent greenhouse.

1. Estimate based on Eurostat data from 2021 and EU project ODYSSEE - MURE.

2. Estimate by COGEN EUROPE based on Eurostat data from 2021, assuming cogeneration plants displace the marginal electricity mix and a conventional boiler.

3. Estimate based on Eurostat data from 2021 and the IEA.

In every corner of Europe, millions of Europeans rely on cogeneration in their daily lives and jobs. The growth pathway for cogeneration shown below can help all Europeans to fully reap its benefits, for a strong and united Europe leading globally in energy and climate.



Imagine what cogeneration can do for the next generation!

[Discover our vision for the future](#)

COGEN EUROPE is the European Association for the Promotion of Cogeneration, established in 1993. We work with the EU institutions and other stakeholders to shape better policies and eliminate administrative, regulatory and market barriers to the wider use of cogeneration in Europe. The association has 55 members including 17 national associations and 38 companies spanning the entire value chain from technology manufacturers to end-users and consultancies.

National Associations



Corporate Members



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