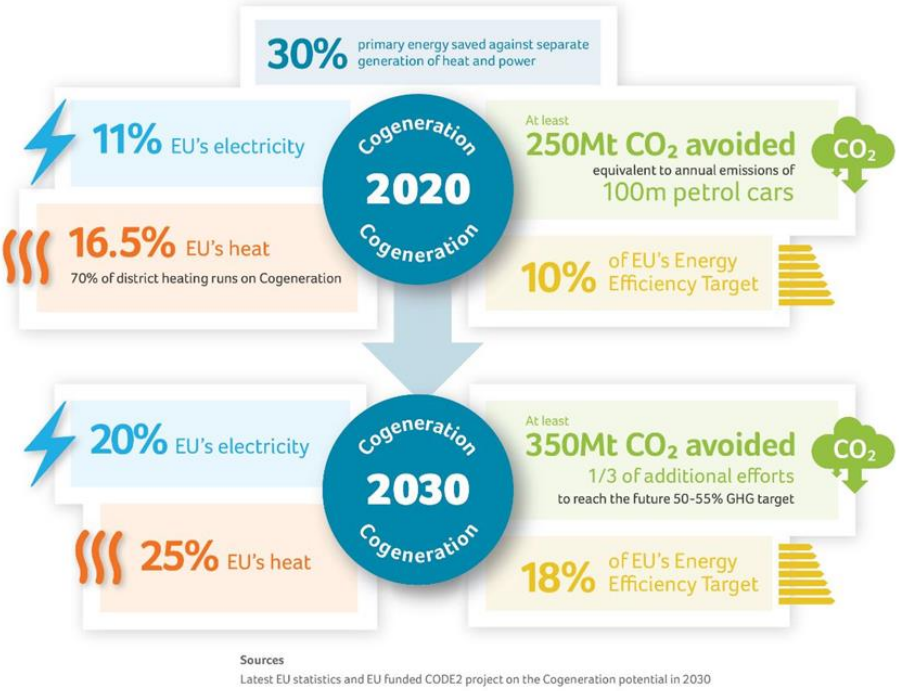
Position Paper

An ambitious Renovation Wave calls for affordable, integrated and efficient energy in buildings

Becoming the first climate neutral continent will require multiple climate-friendly solutions to ensure a cost-effective energy transition, citizens' engagement and economic competitiveness. The cogeneration sector is committed to contribute to achieving climate neutrality by 2050. With cogeneration as its backbone, Europe can build a resilient, distributed and carbon-neutral European energy system providing efficient and affordable heat and electricity where and when Europeans need it.

In every corner of Europe, millions of homes, public buildings and businesses rely on cogeneration for heating, cooling and power.

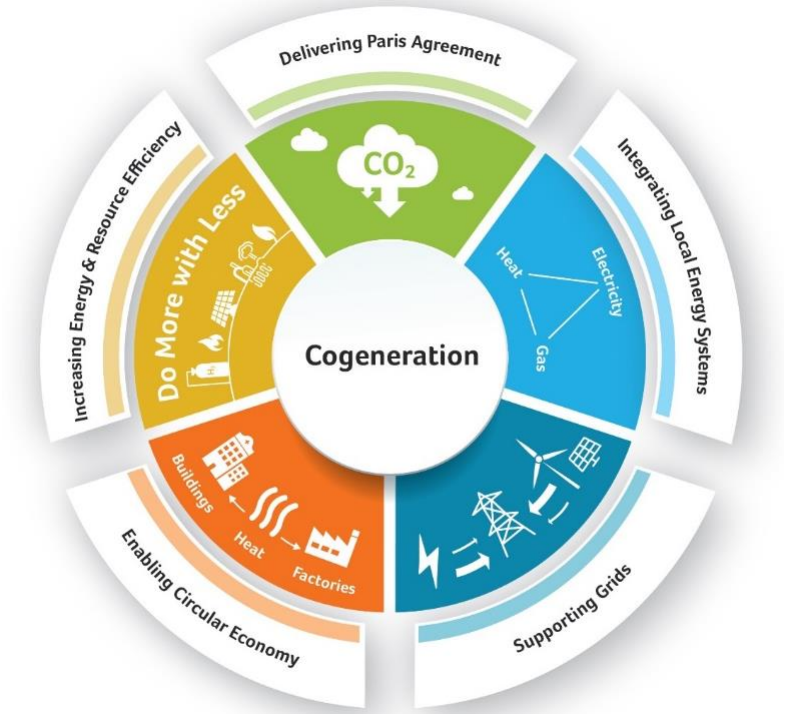


COGEN Europe • The European Association for the Promotion of Cogeneration
Avenue des Arts 3-4-5, 1210 Brussels, Belgium

T +32 (0)2 772 82 90 | F +32 (0)2 772 50 44 | info@cogeneurope.eu

www.cogeneurope.eu

Cogeneration delivers the fundamental dimensions that Europe needs to become carbon-neutral:



- **Delivering the Paris Agreement**: Cutting significantly CO_2 emissions already today. Currently, over 70% of cogeneration is low carbon, of which roughly 30% uses renewable energy sources. In the future, cogeneration will continue displacing more carbon intensive and less efficient generation. Accelerating the uptake of energy sources such as hydrogen and bioenergy will help fully decarbonising cogeneration.

- **Integrating Energy Systems:** Optimally linking electricity, gas and heat networks and ensuring their most efficient use at local level. This is key to avoid energy waste, foster a more flexible energy system, cost-effectively integrate substantial amounts of renewable energy in the economy.

- **Maximising energy and resource efficiency:** Empowering industry, SMEs, cities and citizens to make the most of the valuable primary energy sources available to them and avoid the waste of heat. Cogeneration must be prioritised for the use of low carbon fuels (e.g. natural gas in the transition phase) and fuels of the future like bioenergy and hydrogen, for cost saving purposes and to leave more of them available to decarbonise other sectors.

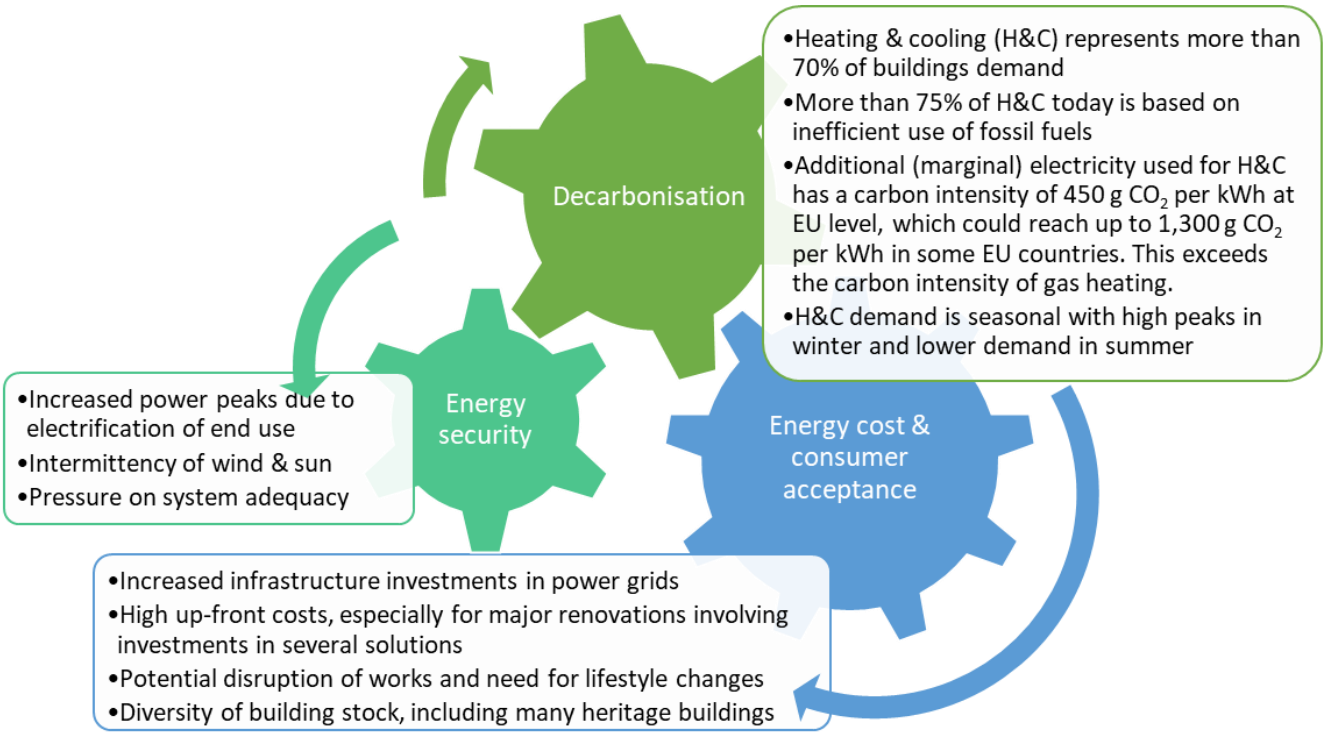
- **Enabling circular economy**: Recovering waste heat from industry for use on-site or re-use via district heating in nearby factories, businesses and local communities. The latter enjoy affordable and secure heat and the heat supplier gets extra revenues for this service.

- **Supporting power grids**: Supplying efficient and flexible electricity to successfully electrify the economy by meeting electricity demand at times of low wind and sun, as well as reducing pressure on grids during peak demand and needs for costly electricity grid reinforcement.

Buildings will be critical in delivering an ambitious Green Deal while putting Europe on a sustainable recovery path in the context of the current COVID-19 crisis. The Renovation Wave presents significant opportunities to re-launch the EU economy, help Europe meet its Paris Agreement commitments, bring cleaner air to citizens and foster healthier and more comfortable environments to live in.

Buildings represent more than 30% of EU's emissions and energy consumption. Heating and cooling, as well as hot water, make up a 80% of energy use in buildings and significantly impact energy affordability and energy poverty. More than 75% of buildings are inefficient, because of a leaky building envelope, the use of old and inefficient heating systems or both. In addition, 90% of the existing building stock will still be standing in 2050.

While there is significant potential in building renovation, the challenges of large-scale building renovation revolve around the cost- energy security - decarbonisation trilemma:



A holistic approach to buildings renovation must consider both consumer needs and the energy system as a whole, which to deliver a timely and cost-effective transformation of the building stock aligned to the Paris goals.

Cogeneration is uniquely positioned to deliver an ambitious renovation wave, as part of a cost-effective and customer-centred mix of buildings solutions

- ✓ From blacksmith to fuel cell cogeneration
- ✓ Nice Smart Valley/Interflex
- ✓ Tesla running on fuel cells with green gas

Micro-cogeneration & Fuel cells in homes

Cogeneration in public buildings

Cogeneration with District Heating

- ✓ Stadtwerke Hassfurt DHC goes for H2 cogeneration
- ✓ Flexible cogeneration for District Heating in Kiel
- ✓ Vienna using waste heat from cogeneration for its district heating
- ✓ Cogeneration Battery – Warm up with cold wind

- ✓ Cogeneration keeps Belgian Senators warm
- ✓ Reliable and affordable energy for hospitals

Cogeneration heat can reach buildings through district heating or can be installed on-site, as micro-cogeneration and stationary fuel cells.

Cogeneration enables systems integration by supplying efficient heat to or in buildings and flexible electricity to support power grids. It smartly and efficiently integrates electricity, heat and gas at local level.

Cogeneration makes better use of energy sources available locally to consumers, buildings and districts. This includes low carbon and renewable fuels like the various gases in and off-grid (H2, (bio)methane, e-gases), biomass, geothermal, solar thermal and waste heat.

Cogeneration reduces the energy bills for the consumer.

Cogeneration reduces overall energy system costs. It minimises the operating costs of electricity grids because electricity is produced and consumed locally. In addition, it helps avoid grid reinforcements, by providing firm capacity.

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Recommendations for an encompassing, cost-effective and ambitious Renovation Wave

Put energy efficiency first

- Apply energy efficiency across the entire energy value change, complementing demand reduction with uptake of efficient energy solutions. Reinforce primary energy savings as the key measure of efficiency in buildings across EU legislation. Apply energy efficiency to all energy sources used in buildings, including renewable energy and electricity.
- In the heating and cooling sector, the Renovation Wave should prioritise the replacement of inefficient boilers, as well as the modernisation of existing DHC infrastructure. The Renovation Wave should set the framework for further support for the uptake of efficient heating systems, including micro-cogeneration. Supporting the gradually increasing the uptake of renewable energy sources and their efficient use in the energy carriers accessible to consumers across electricity, gas and heat will ensure customer choice and affordability of energy.
- The efficient use of unavoidable waste heat, including as a fuel to in cogeneration, is a key efficiency measure to complement district heating uptake and modernisation. Policymakers should also identify and promote measures to minimise the waste of heat through high efficiency cogeneration.

Set a level playing field

- Develop robust and consistent criteria, methods and standards for building efficiency and decarbonisation at lowest cost via energy labelling, ecodesign, energy taxation, electricity grid tariffs and building codes.
- Ensure that financing and support schemes are directed towards the uptake of efficient solutions like cogeneration, including micro-cogeneration in buildings or cogeneration with district heating, in line with identified potentials at EU, national and local levels.
- Set a level playing field between different energy carriers accessible to buildings, including electricity, heat and gas. In doing so, he Renovation Wave should distinguish between the fuels used (solid fossil fuels, natural gas, various renewables), the energy carriers using them (gas networks, electricity, district heating) and the end use solutions (e.g. heat pumps, boilers, micro-cogeneration).
- Accurately assess the impacts of end-use electrification, accounting for heat seasonality and marginal impacts on power systems, requiring the ramp up of fossil fuel peaking plants to meet the additional demand on the grids, in terms of operational costs and grids investments.

Empower consumers and local actors

- Promote a diverse mix of integrated, efficient and renewable buildings technologies.
- Customise and optimise renovation solutions at local, district and building levels.
- Strengthen the role of local actors to ensure planning at local level to design customised solutions that offer the best value and comfort for the end-user, while maximizing system level benefits in terms of carbon efficiency

Take an energy systems approach

- Synchronise Energy Systems Integration and Hydrogen Strategies with the Renovation Wave, in particular when it comes to district heating and gas applications in buildings.
- Support Member States to deliver ambitious Comprehensive Assessments for heating and cooling, which effectively identify potentials for district heating, cogeneration, renewable/decarbonised gases and other buildings solutions. Ensure that the potentials identified are accompanied by adequate policy and financing measures.

- Develop a roadmap and associated measures for the uptake of renewable and decarbonised gases, and their efficient use, in the building sector

- Identify and promote synergies between different building solutions, including complementarity between cogeneration and end-use electrification of heat.

Support EU industry to deliver a green recovery

- Target public and private funding towards the faster uptake and industrialisation of state-of-the-art European building solutions, like micro-cogeneration and fuel cells.
- Remove barriers to innovative business models by energy service providers in the building sector. This could include enabling self-consumers to get extra revenues by providing grid services (e.g. demand response, peak shaving)
- Steer investments towards local job creation, including the up-skilling of building professionals.
- Encourage EU industry to share their know-how and show leadership globally.