

THE CLIMATE STRATEGY PURSUED

ENGIE has set a goal of reaching Net Zero Carbon ⁽¹⁾ throughout its entire value chain (scope 1, 2 and 3) by 2045, following a well-below 2°C trajectory certified by the Science Based Target initiative (SBTi) in February 2023. In this way, the Group is reducing its direct and indirect greenhouse gases (GHG) emissions by at least 90% compared with 2017 ⁽²⁾. At the same time, it plans to work on the development of carbon sinks in order to neutralize its residual emissions over the long term and thus contribute at the right level to planetary carbon neutrality. The Group is also committed to supporting its customers in the reduction of their GHG emissions in order to accelerate the decarbonization of its own value chain.

ENGIE’s strategy to decarbonize its value chain is based on three pillars (Reduce, Avoid and Remove) in line with the methodological framework of the Net Zero Initiative: ⁽³⁾

<p>Reduce ENGIE’s GHG emissions</p> <p>First, reduce the direct and indirect GHG emissions resulting from ENGIE’s activities by at least 90% compared compared to 2017</p>	<p>Remove carbon from the atmosphere</p> <p>Then, increase carbon sinks to neutralize the last residual emissions that are the most difficult to abate.</p>	<p>Avoid customers’ GHG emissions through ENGIE’s solutions</p> <p>Support customers’ decarbonization so that they can reduce their GHG emissions.</p>
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ENGIE’s 2045 Net Zero Carbon target

(1) Definition of the SBTi’s Net Zero standard (2) Baseline year for ENGIE’s climate targets defined with the SBTi (3) Carbone 4 initiative supported by ADEME

ENGIE’S VISION FOR THE ENERGY TRANSITION IN EUROPE

Given the prevailing uncertainty regarding the evolution of the energy mix, public policies and the development of the sectors, ENGIE is building different scenarios for Europe’s energy future. Each scenario quantifies the volumes and prices of the main commodities (electricity, gas, coal, hydrogen, oil and CO₂) of the 19 main European energy markets between 2023 and 2050.

The reference decarbonization trajectory chosen by ENGIE focuses on a balanced mix, in which renewable gases along with electrification of usages all have their benefits, in order to guarantee the best levels of efficiency and resilience of the energy system. In addition,

energy sufficiency and efficiency are an integral part of the efforts to reduce GHG emissions.

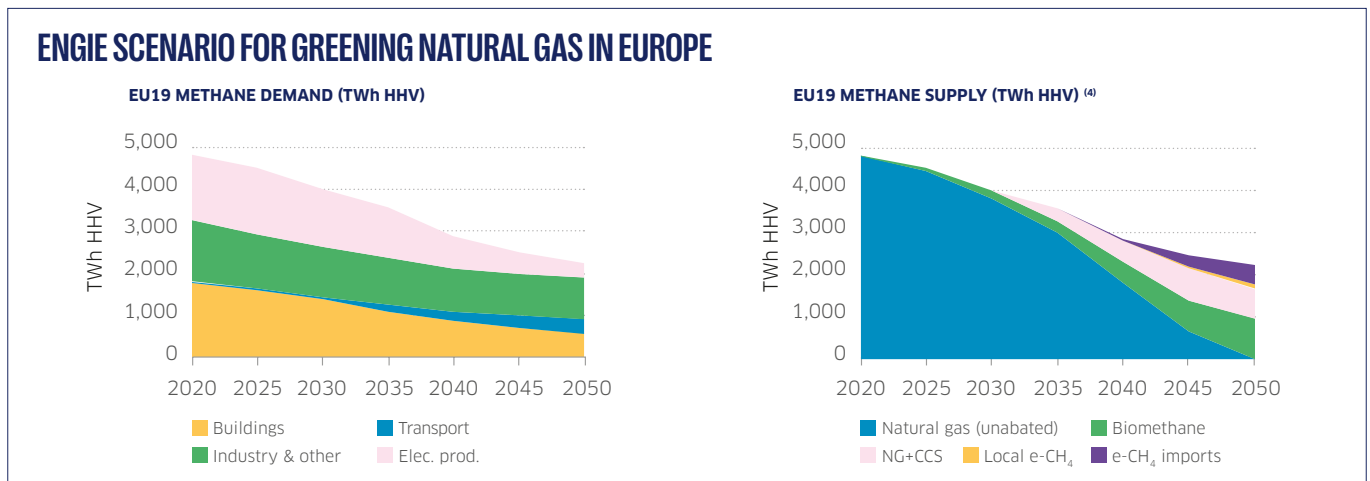
Studies carried out by the Group for the European scope have shown that large-scale electrification would generate additional costs of more than 15% by 2050 and would result in increased vulnerability of the electricity system. The Group also believes that the use of a wider range of decarbonization options puts energy system players in a better position to benefit from technological progress and meet the needs of flexibility inherent to the energy market. It would also reduce the economic and political pressure on electricity infrastructures (new lines to be built, acceptability of decarbonized

production assets, whether it is wind, solar or nuclear).

Different gases will contribute to the energy system of tomorrow. Biomethane, the first contributor, is part of a circular economy, decentralized solutions and creates local jobs. It can be injected into all existing networks without adaptation.

Renewable hydrogen produced by electrolysis from renewable energy sources will be key to decarbonizing high-temperature industrial processes and heavy transport.

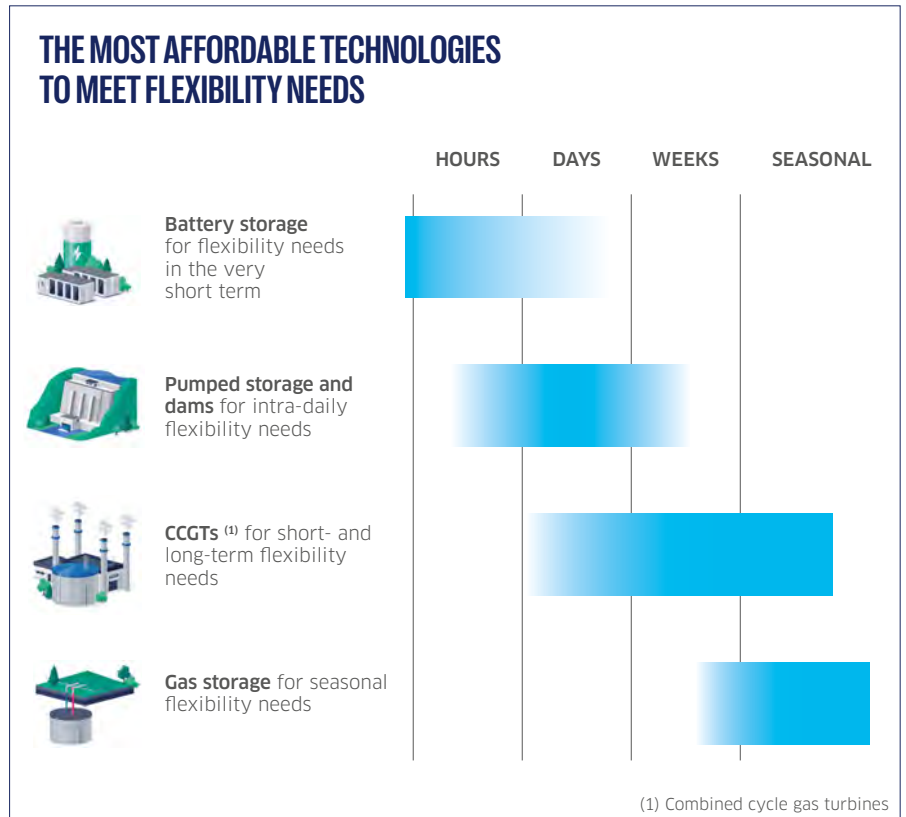
Finally, synthetic methane will complete the possible solutions. More details on the role of renewable gases can be found in the “renewable gases” notebook.



(4) This chart tracks methane demand only. It should be noted that ENGIE’s reference decarbonization scenario integrates hydrogen for approximately 1,000 TWh HHV in 2050 (excluding e-CH₄).

THE ROLE OF GAS IN THE DECARBONIZATION OF THE ENERGY SECTOR

- 1 A need for supply security:**
The Group's gas-fired energy production assets (combined cycle gas turbines, or CCGTs) are essential today to the security and balance of the energy systems of which they are part. In 2022, for example, gas assets played a central role in the balance of the French electrical power system when there was strong pressure on supply.
- 2 Needs for balance and flexibility:**
In an electricity mix dominated by intermittent renewable energy, the need for flexibility solutions to ensure the balance of the energy system will increase significantly (fourfold increase in 2035 according to the IEA in its Net Zero Emissions scenario). In the medium-term, only thermal assets can provide this flexibility on an intra-weekly and inter-seasonal basis.
- 3 Decarbonization of gas assets in the long term:**
Over the long-term, the fleet of thermal assets will progressively decline (end of life of power plants, partially replaced by renewable production), but the remaining assets will stay to help balance the system (peak assets). In addition, biomethane and renewable hydrogen will contribute to the decarbonization of gas-fired thermal plants by 2040-2045.



THE TRAJECTORY SELECTED

Already certified for a 2°C trajectory by the SBTi since 2020, ENGIE earned its new well-below 2°C certification early in 2023 with new targets for 2030 (see p. 79). ENGIE committed to reduce the carbon intensity related to energy generation and consumption (scope 1 and 2) that goes beyond the SBTi requirements with a commitment of -66% over the period from 2017-2030 instead of the -55% required by the SBTi.


Projections for use of gas-fired thermal power plants do not currently allow ENGIE to commit to a trajectory of 1.5°C, which would require a 78% reduction in carbon intensity over the same period. Such a reduction could not be achieved without the disposal of assets. These assets could not be closed. Indeed, these thermal assets could not be closed, otherwise the security of the electrical system to which they are connected would be jeopardized. They would thus continue to emit GHG emissions. ENGIE is therefore playing its role as an industrial company engaged in the energy transition, remaining at this stage a key player in thermal generation, resolutely committed to decarbonizing these assets with different technologies (biomethane, carbon capture and, depending on technological developments, renewable hydrogen). To fully industrialize these technologies, despite promising changes in the regulatory framework (particularly in the EU), we believe that the credible horizon is 2040-2045.


CLIMATE OBJECTIVES AND ASSOCIATED ACTION PLAN

The levers of ENGIE's decarbonization based on medium and long term science-based targets

2030

Reduce the main sources of GHG emissions following a well-below 2°C trajectory

 43 Mt CO₂ eq. linked to energy generation

 52 Mt CO₂ eq. linked to the use of products sold gas sales

Remove carbon up to the residual emissions from ENGIE's activities in four countries (including Brazil) and the group's ways of working

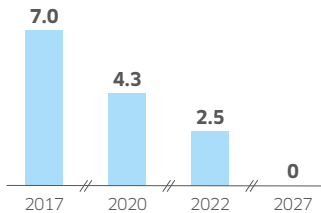
2045

ENGIE is committed to being Net Zero Carbon for all its scopes (1, 2 and 3). Reduce ENGIE's direct and indirect GHG emission by at least 90% compared to 2017. Then increase carbon sinks to neutralize the Group's residual emissions to ENGIE full value chain.

Tracking the main decarbonization levers between 2017 and 2030

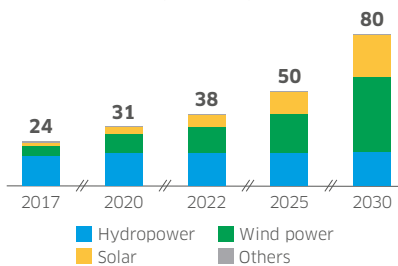
COAL

CHANGE IN COAL-FIRED ELECTRICITY CAPACITIES (GW@100%)



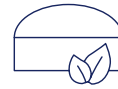
RENEWABLE ELECTRICITY

CHANGE IN RENEWABLE ELECTRICITY CAPACITIES (GW@100%)



RENEWABLE GASES

BIOMETHANE



10 TWh of biomethane produced in Europe by 2030

€2.5 bn invested in the network for biomethane connections by 2030

€3 bn invested in renewable gases (including e-CH₄) by 2030

~30 TWh / year of biomethane sold by ENGIE in B2B and B2C services in 2030

50 TWh / year biomethane connected production capacity in France in 2030

HYDROGEN



4 GW of renewable hydrogen production capacity through electrolysis by 2030

700 km of dedicated hydrogen networks by 2030

1 TWh of hydrogen storage capacity by 2030

30 TWh of hydrogen in the managed energy portfolio by 2030

More than 100 charging stations for hydrogen vehicles by 2030

€4bn invested in hydrogen by 2030

Key changes

CAPEX 2023-25

Targets

Targets progress report between 2017 and 2030

No new investment

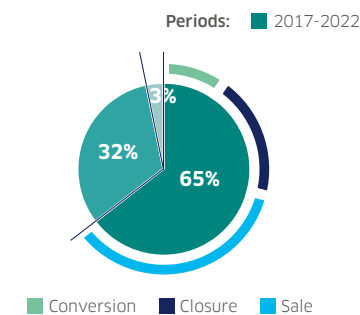
Between €13 bn and €14 bn

Over the entire Group, around 75% of 2023-2025 growth CAPEX will be aligned with the European taxonomy.

Coal phase-out in 2025 in continental Europe and in 2027 worldwide

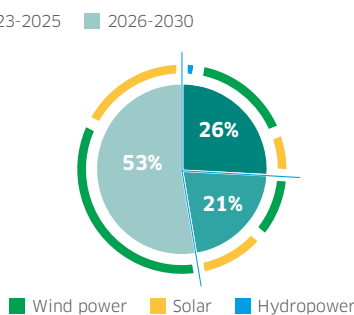
50 GW of renewable capacity in 2025 and 80 GW in 2030

COAL PHASE-OUT
In number of electrical and heating assets



ENGIE is establishing a strategy to move away from coal in the following merit order: closure, conversion, then, if not possible, sale, ensuring a continuous dialog with stakeholders (ENGIE Just Transition policy)

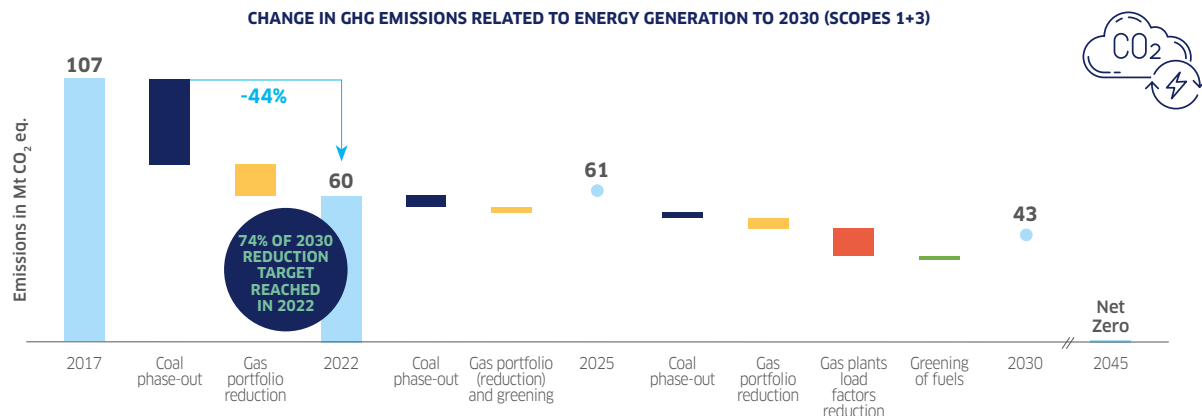
DEVELOPMENT OF RENEWABLES
In capacities(GW@100%)



ENGIE targets to reach 58% of renewables capacity in its energy production by 2030, with a target for commissioning solar and wind power capacity at 4 GW per year on average in 2022-2025 and 6 GW per year in 2026-2030.

DECARBONIZE ENERGY PRODUCTION (SCOPES 1 AND 3)

The GHG emissions related to ENGIE's energy production (electricity, heating and cooling) have decreased by 44% since 2017 over all of scope 1 (direct emissions associated with fully and proportionately consolidated assets) and scope 3 (indirect emissions associated with ENGIE equity associates). This represents 74% of the reduction target to reach 43 Mt CO₂ eq. in 2030 versus 2017.



Four primary levers are used: the phase-out from coal, the reduction of the gas-fired power plants (closure of several plants at the end of life), the reduction in the utilization time of gas assets (reduction of the load factors) and the decarbonization of the heating networks.

Between 2017 and 2022, thermal generation (coal and gas) fell by 22% (-35 TWh). In 2030, gas-fired power plants in Europe will act primarily as flexible capacity to support the development of renewable energy.

The Group currently estimates that the Ukrainian crisis accelerated the decreases in the use of fossil gas and the utilization rate of our power plants over the 2025-2030 period; the uncertainties related to the evolution of the energy system make any increase in the 2030 targets difficult at this stage.

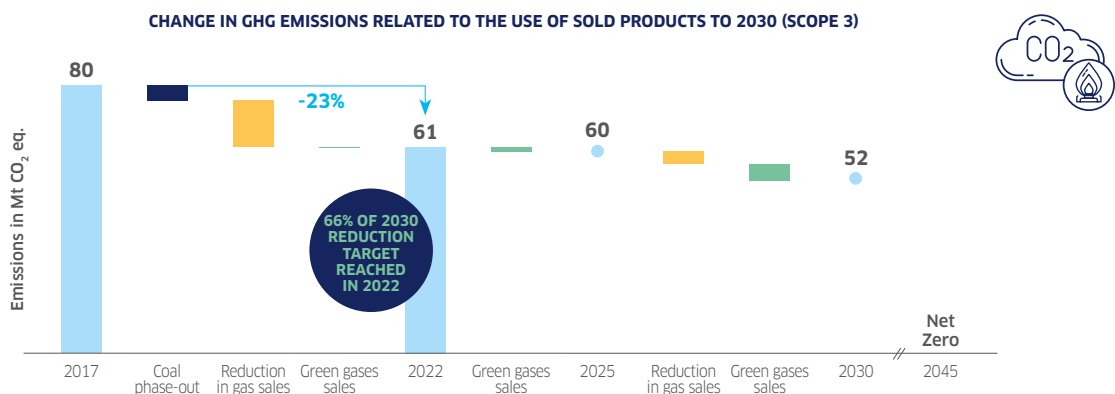
The strong growth in the centralized renewable fleet, as a replacement for thermal assets, plays an essential role in the Group's decarbonization and enabled a reduction from 343 gCO₂ eq. / kWh to

216 gCO₂ eq. / kWh in the carbon intensity of the energy production (scopes 1+3) between 2017 and 2022. This is ENGIE's first decarbonization lever and will count for around half of the decrease in carbon intensity over the 2017-2030 period.

Moreover, in 2022, renewable energy and recovery energy represented more than 50% of the energy mix of ENGIE's large heating networks and industrial services in France.

DECARBONIZE THE USE OF THE SOLD PRODUCTS (GAS SALES)

GHG emissions linked to the use of the sold products (sales of fuels, primarily natural gas) have fallen by 23% since 2017. This represents 66% of the reduction target to reach 52 Mt CO₂ eq. in 2030 versus 2017.



Three main levers are used: the end of coal sales since 2017, the reduction in gas sales (related to energy sufficiency, energy efficiency and the transfer to other energy vectors) as well as the greening of

sales (biomethane and hydrogen). This last lever will become more important between 2022 and 2030, before becoming the first decarbonization lever between 2030 and 2045. All the reductions in sales

volumes between 2017 and 2022 have been replaced by the development of renewable electricity sales.

DECARBONIZE IN THE LONG TERM (2030-2045)

Over the longer term, the Group will continue to use all the levers presented and is targeting a reduction of at least 90% in its absolute emissions compared to 2017 across all scopes. Massive use of renewable gases (biomethane, renewable hydrogen, etc.)

will progressively become the Group's primary decarbonization lever with renewable electricity capacity, ahead of the overall reduction of fossil gas. To a lesser extent, carbon capture (CCS) technologies will help the Group to achieve its 2045 targets.

To become competitive, renewable gases will have to benefit from public

support, the creation of partnerships and market mechanisms in order to scale up these new energy vectors. This will also imply an adaptation of existing gas networks in order to achieve the goal (in the case of France) of 100% renewable gases in the transport and distribution networks in 2050.

DECARBONIZE ENGIE'S OTHER ACTIVITIES

GHG emissions related to suppliers (5% of the carbon footprint)

ENGIE is committed to supporting its top 250 preferred suppliers (excluding energy purchase) so that they are all certified or aligned with the Science Based Target initiative by 2030.

This would cover 20% of the Group's purchases in terms of expenses. At the end of 2022, 23% of the top 250 preferred suppliers were already certified or aligned.

As a founding member of the First Movers coalition – which aims to accelerate the creation of a competitive and carbon neutral supply chain – ENGIE is committed to ensuring that 10% of its wind turbines will be made of low-carbon steel by 2030.

In the second half of 2022, ENGIE launched a dialog, primarily via the suppliers day, with its 400 largest suppliers in terms of GHG footprint (28% of the purchasing carbon footprint) in order to understand their maturity with respect to decarbonization (effective measure over their 3 scopes, calculated figures and restrictions, etc.) This will allow the launch, in the near future, of the first industrial projects to decarbonize the Group's procurement.

Methane emissions from the gas networks (1% of the carbon footprint)

The methane emissions related to gas networks controlled or operated by the Group are primarily due to venting safety procedures.

ENGIE has been committed for many years to reducing these methane emissions which accounted for 1.3 Mt CO₂ eq in 2022.

In 2020, the Group's French subsidiaries (GrDF, GRTgaz, Elengy and Storengy) joined the Oil & Gas Methane Partnership 2.0 (OGMP), an initiative managed by the United Nations Environment Program, which intends to share an internationally recognized reporting framework and minimize the associated methane emissions. In this respect, these operators were classified in 2022 at the highest level of commitment – the "gold standard."

Today, ENGIE is moving ahead and has set a target of a worldwide reduction of 30% in its methane emissions related to its consolidated gas networks (transport, distribution, LNG terminals and storage) between 2017 and 2030.

It should be noted that the management of energy networks (electricity and gas) involves GHG emissions whether it is the losses of the electrical grids or the methane emissions in the gas networks. Thus, in France for example, these networks result in fewer emissions per MWh, despite the global warming potential of the methane and the low carbon intensity of the electricity.

Emissions related to ways of working (0.15% of the carbon footprint)

ENGIE has set a Net Zero 2030 target related to its ways of working.

The goal is to reduce the Group's carbon footprint related to the buildings, digital tools and practices, travel, home-work commutes and vehicle fleets.

Employees are involved in such processes so as to identify and share best practices. This approach is complemented by an ongoing training program and a review of the associated Group policies (purchasing, real estate and IT policies in particular).

Reaching net zero by 2030 will be made possible thanks to two main levers:

-35% of the electricity consumption of the buildings between 2019 and 2030 and 100% of vehicle replacements with low-emission vehicles by 2030.

With the current energy crisis, ENGIE also set up a sufficiency plan in 2022 designed to reduce the consumption of buildings by 15% (winter period in Europe), through measures related to heating and air conditioning notably.

NEW TARGET FOR METHANE EMISSIONS



30%

reduction in methane emissions between 2017 and 2030 worldwide

OGMP COMMITMENTS

Oil & Gas Methane Partnership (OGMP) 2.0 aimed at reducing the methane emissions of the networks



CH₄⁽¹⁾ intensity of 0.125% by 2025



-80% CH₄ emissions in 2025 compared with 2016



-25% CH₄ emissions in France; -45% in the United Kingdom; -35% in Germany in 2025 compared with 2016



-30% CH₄ emissions in 2025 compared with 2015

(1) CH₄ emissions / volume of gas distributed