

JULY 2022

ENERGY CRISIS:

**OPPORTUNITY
OR THREAT FOR
THE EU'S ENERGY
TRANSITION?**

A data driven analytical
Executive Brief

This Executive Brief was prepared jointly by the EBF staff and Enerdata, based on Enerdata proprietary data.



Introduction

The European Climate Law sets a legally binding target for the Union to reach climate neutrality by 2050. This is accompanied by the European Commission complementary set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030.

As the production and use of energy account for more than 75% of the EU's greenhouse gas emissions, decarbonising the EU's energy system is critical to reach both 2030 climate objectives and the EU's long-term strategy of achieving carbon neutrality by 2050. One of the three key principles for achieving the clean energy transition is the assurance of a secure and affordable EU energy supply.

However, with limited and depleting resources, the EU experiences extremely high dependency rates, at 95% for oil and at 85% for gas¹. A high share of fossil fuel in the energy mix is not only a significant source of greenhouse gas emissions, but also an issue of security of supply. The recent succession of crises (Covid-19, the surge in gas and electricity prices in 2021, and the war in Ukraine) is an implacable reminder that long term climate objectives cannot be achieved without addressing in parallel the issues of energy security and affordability. These three topics are the pillars of the EU's energy strategy

In its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine, on March 8th, 2022, the EU adopted the REPowerEU Plan to phase-out EU dependency on Russian fossil fuels through energy savings, diversification of energy supplies, and an accelerated roll-out of renewable energy.

The European banking sector plays an important role in supporting these EU policies due to its capacity to provide and channel financial resources towards activities that contribute to achieving climate neutrality. Many banks are committing to align their portfolios with the climate neutrality objectives. For example, through the Net-Zero Banking Initiatives, banks are committing to transition GHG emissions out of their lending and investment portfolios to align with pathways to net-zero. They are also setting intermediary targets, focusing on priority sectors, such as energy and transportation, where banks can have the most significant impact in a transparent and publicly accountable way.

This data driven analytical executive brief, aims at facilitating banks, their customers but also other stakeholders in setting their strategies and targets, as it explores how the EU's energy transition could be impacted by the recent crises in the short term, through the lens of the latest trends in fossil fuel consumption, while also examining possible alternatives in the long term.

¹ 95% for oil (relatively stable) and at 85% for gas (+15% over the past decade); Source: Enerdata, Global Energy and CO2 Data

KEY TAKE AWAYS

General post-Covid economic and energy/climate context:

1. The EU's energy consumption is **still dominated by oil and gas**. Transportation accounts for 70% of oil demand in the EU (final oil energy consumption), with road transportation accounting for 60%.
2. The EU's total natural gas demand reached 412 billion cubic meters of natural gas (bcm) in 2019 before the start of the pandemic. The energy sector (mainly power plants) and buildings account for almost $\frac{3}{4}$ of total consumption, with respectively a share of 37% and 35%. The share of industry is slightly below $\frac{1}{4}$ of total consumption.
3. In the run-up to the pandemic, the objectives set by the UN Climate Change Conference of the Parties for **decarbonisation objectives were far from being reached**, and the CO₂ emissions mitigation observed during the pandemic years (2020-2021) was, as it turned out, mostly (if not only) due to lockdown measures, therefore temporary. The global drop in CO₂ emissions in 2020 approximately represent the required annual decrease in line with the Paris Agreement.
4. The strong post-pandemic **growth automatically resulted in a surge in emissions** (notably in the industry and transport sectors) due to the catch-up effect, i.e., the appetite for goods and leisure (fueled by Covid stimulus policies and resulting consumer savings).
5. This economic situation led to **inflation rates that had not been seen for decades** in western countries. In particular, **energy prices rose sharply**.
6. Oil consumption was hit by recent crises, but short-term price capping measures could **delay the transition to decarbonised transportation**.

Short-/Mid-term consequences of the war in Ukraine

7. The EU is highly dependent on natural gas imports, especially from Russia. There are no immediate solutions or signals to reduce this dependency in the short term, which is made worse by the significant uncertainty about the continuation of natural gas supply for the winter of 2022-2023.
8. We can deduct from these events the following negative consequences for the energy transition:
 - The **role of natural gas in the power mix** as a transition fuel (which was already subject to political debate) could be further questioned, depending on how fast EU natural gas supply can be diversified away from Russian natural gas.
 - It is reasonable to expect the **power generation coal phase-out to be delayed** by a few years. Coal's comeback as a temporary solutions in the EU power mix showcases EU structural weakness embodied by the dependency on Russian gas.
9. At the same time, some aspects of the crisis will have the effect of attenuating emission levels:
 - The resulting economic slowdown that some European countries are currently facing will undoubtedly have the effect of **cutting down emissions over the next few months**.
 - The uncertainty regarding the natural gas supply has already led some countries to significantly **speed up the implementation of their new renewable capacities**.
10. The war in Ukraine has reinforced the pressure on the price of natural gas:

- **future gas prices indicate that this situation could extend beyond 2024**, with limited additional and quickly available LNG supply
- At global level, high energy prices and inflation result in a **slow-down of economic growth**. China is still facing Covid-19 lockdowns. Supply chains need to be re-shaped. **Growth in energy demand is expected to slow down** as well.
- With the decrease in the oil supply deficit, **oil prices are expected to dip in the near term**, as already observed in the US (though this country is self-sufficient).

Long-term consequences of the EU gas crisis on the energy transition

11. On the supply side, European gas production is expected to decrease, while LNG regasification capacities are expected to increase; leading to believe that **supply will be further limited**.
12. Addressing energy consumption with **energy savings offer many options** for the EU, which have not been significantly leveraged so far. There is room for strong reductions in final gas consumption, especially:
 - in buildings with efficiency measures (supported by regulatory schemes and labelling) and sufficiency behaviours (-40 bcm in 2030 vs. 2019)
 - with the roll-out of heat pumps (-37 bcm in 2030 vs.2019), supported by incentives in some countries
13. In the power sector, decreasing gas power generation will depend on the **ability to boost the penetration of renewables** (in particular, wind offers the largest potential), and flexibility solutions
14. **Biogas could play a significant role by 2030**. This technology is flourishing and considered both by country-level players and local authorities.

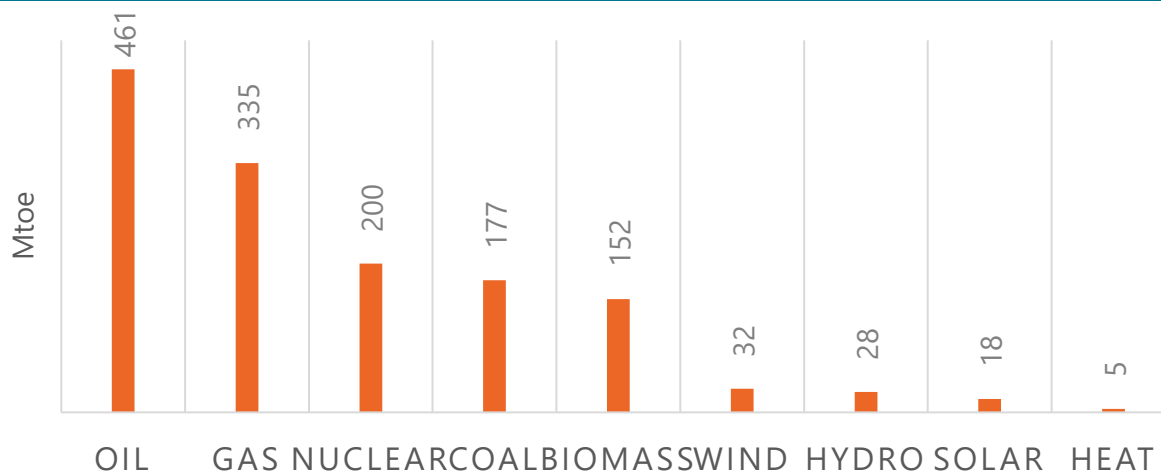
To conclude, some of the positive and negative consequences (in terms of climate) will even out. Since wind turbines, solar panels and hydrogen trucks cannot be massively deployed overnight, the required emission mitigation in the short run to meet climate targets is not to be expected over the next couple of years. However, recent crises could boost decarbonisation plans in the longer term, all the more as energy dependency has risen to the top of the policy agenda. This could be made possible by leveraging technologies that have already or nearly reached maturity.

The regulatory framework needs to be further adapted, at EU and EU member States level, to incentivize the necessary investments.

1. The EU's energy consumption is dominated by oil and gas

In 2019, before the Covid-19 crisis, oil was by far the most consumed energy source in the EU (Figure 1): it accounted for one third of total energy consumption, followed by gas (24% of total consumption). At global level we observe the same shares for oil and gas. The main difference stems from a lower dependency on coal at EU level (13% share in EU vs. 27% globally) with an acceleration of coal phase-out since 2015. This is balanced with a higher share of nuclear in the EU globally (14% vs. 5%).

Figure 1: EU primary energy consumption per fuel, 2019 (pre-Covid level)



Source: [Enerdata, Global Energy and CO₂ Data](#)

2. Oil consumption was curbed by the recent crisis, but short-term measures to limit the surge in oil prices could delay the transition to decarbonised transportation

Transportation and more precisely road transportation drive oil consumption with respectively 70% and 60% share in final oil energy consumption in the EU². The pandemic has deeply impacted the transportation sector through lockdowns and remote work, which slightly reduced freight transportation but also aviation, with strict prophylactic measures. In 2021 total oil demand rebounded by 5% in the EU (following an 8% drop in 2020) mainly driven by the rebound in economic activity (GDP increased by 5.3% in 2021 vs. 5.9% drop in 2020³):

- The road freight activity remains below pre-Covid-19 level despite the growth in retail and e-commerce, with a more limited rebound in industrial sectors such as construction.
- Covid-19 could have a limited (less than 1% of total oil demand) but long-lasting impact on passenger transportation with up to 40% of jobs suitable for teleworking in OECD countries⁴.

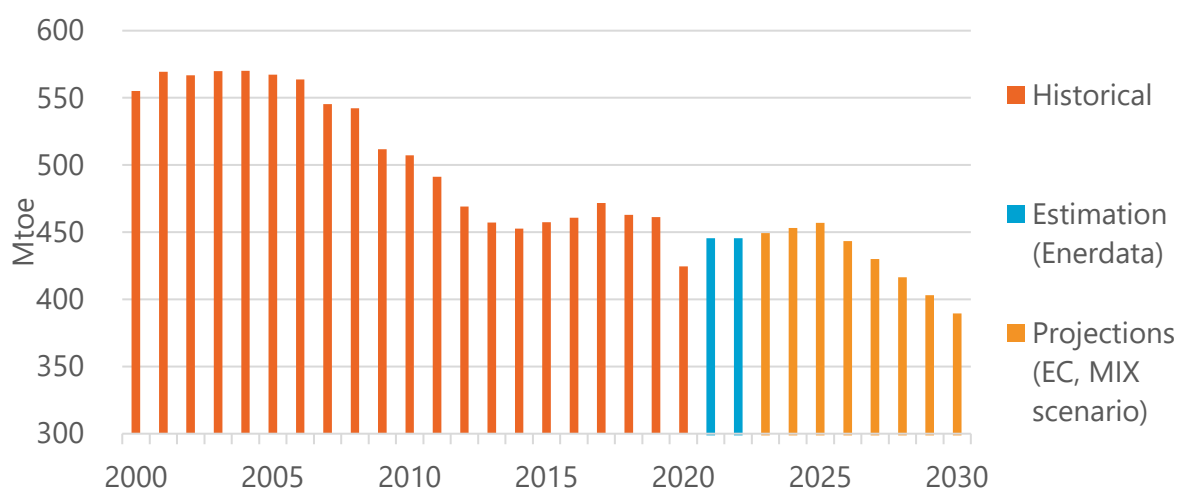
²Enerdata, [Global Energy and CO₂ Data](#)

³Eurostat

⁴IEA, [Oil 2021 report](#)

- In Europe, aviation is not expected to return to its 2019 consumption level before 2023 and business travel could remain below pre-Covid-19 levels in the mid-term.

Figure 2: Oil consumption, EU



Source: *Enerdata, Global Energy and CO₂ Data, EnerMonthly* and *EC, European Commission*⁵

The war in Ukraine heavily impacted the energy market from the start of 2022. Oil prices are reaching record high levels and, more generally, the surge in energy prices that started in 2021 is a key driver pushing inflation to unprecedented levels in the past decade. Consequences on economic activity⁶ and purchasing power will limit or cancel out the growth in oil demand for 2022. In terms of security of supply, the war in Ukraine and the dependency on Russian oil imports have a limited impact (especially compared to gas) on the EU due to both the liquid and global nature of the oil market.

3. Natural gas: from a transition fuel to a threat to the security of supply

The EU's natural gas total consumption reached 412 bcm in 2019⁷ before the start of the pandemic. The energy sector (mainly power plants) and buildings account for almost ¾ of total consumption with respective shares of 37% and 35%. The share of industry is slightly below ¼ of total consumption.

Besides the power sector, natural gas consumption is driven by space-heating in buildings and industrial consumption:

- In the short-term, space-heating is very dependent on climatic conditions; in the longer term, it will be driven by energy efficiency improvements, switch to heat pumps, buildings insulation and gas prices.

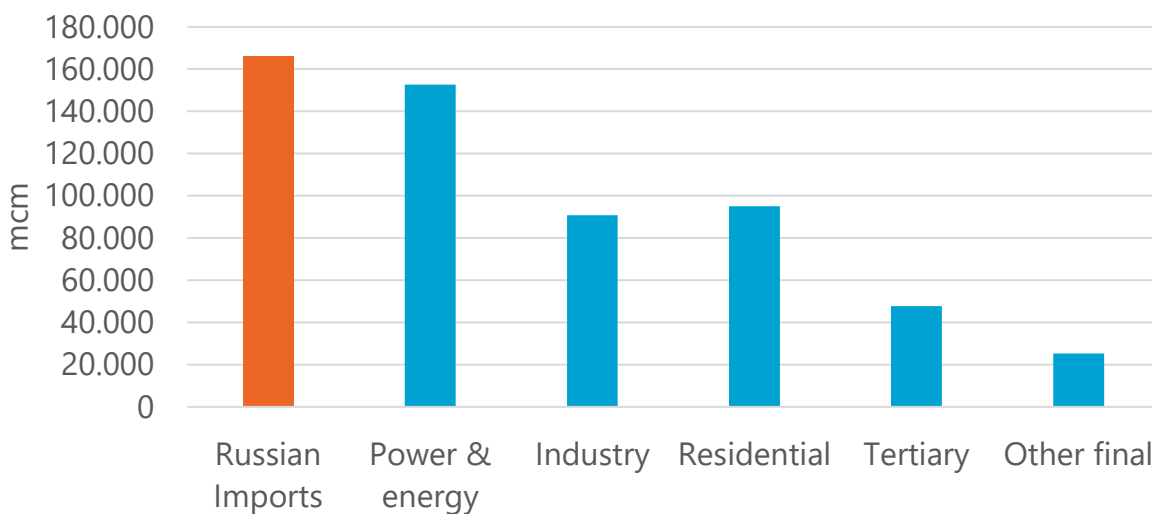
⁵The MIX scenario reaches -55% emissions reduction by 2030 by combining some intensification of the policies and extending the carbon pricing to buildings and road transport.

⁶ EU GDP growth forecast for 2022 reaches 2.9% in IMF April estimates vs. 4% in January pre-war estimate

⁷Enerdata, *Global Energy and CO₂ Data*

- Industry consumption is driven by global economic activity, gas prices and CO₂ prices and in the longer term by energy efficiency improvements and a switch to decarbonated processes.

Figure 3: Natural gas consumption, EU



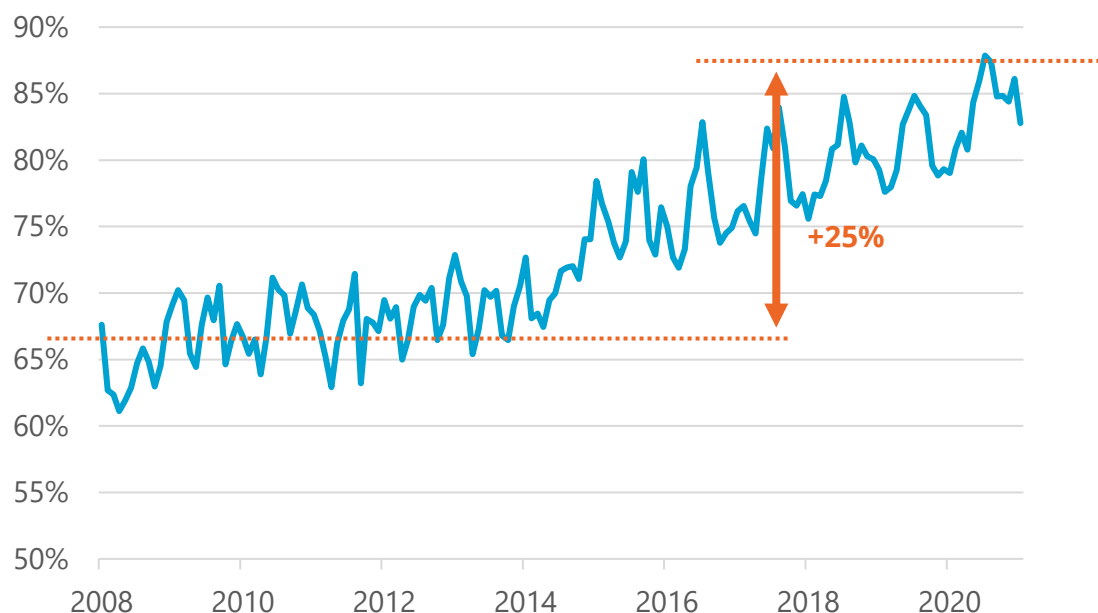
Source: Enerdata, Global Energy and CO₂ Data

Overall, Covid-19 had a limited direct impact on natural gas consumption; the sharp contraction in economic activity in 2020 led to a 3% decrease in industry consumption⁸ whereas buildings consumption variation is more dependent on temperature and space heating needs. However, the economic rebound in 2021 was a key factor that triggered a surge in gas prices which, in return, impacted natural gas demand.

Natural gas is a strategic energy vector for the EU as it satisfies basic needs such as heating or power generation. It is also the fossil fuel with the lowest carbon content. For all these reasons the European Commission endorsed natural gas as a transition fuel in early February 2022. However, over the past decade, with decreasing domestic production, natural gas consumption has been increasingly dependent on imports (see figure 4) and especially Russian imports. With the 2021 economic rebound, both security of supply and natural gas price affordability was endangered just before the Ukrainian crisis. Only a couple of weeks following announcement regarding natural gas as a transition fuel, the European Commission presented its REPowerEU plan to decrease dependency on Russian imports and more generally on natural gas.

⁸ Enerdata, Global Energy and CO₂ Data

Figure 4: Share of natural gas imports (pipe+LNG) and consumption from storage vs. consumption, EU+UK



Source: *Enerdata*

To which extent have the European Green Deal and more recently the "Fit for 55" Package been affected by the current crisis?

The ["Fit for 55" Package](#) includes measures that directly address oil consumption and road transportation, for instance: the development of a new emission trading system for buildings and road transportation, the development of alternative fuels infrastructure, and the ban of internal combustion engine cars or vans by 2035. The recent crises emphasise the need for the EU to decrease its dependency on fossil fuel imports and among the measures put in place to face high energy prices and dependency to Russian oil and gas imports, only a few have a direct positive impact on energy transition. The [REPowerEU plan](#) mentions the option to boost the Fit for 55 proposals with higher or earlier targets but so far, the only short-term measure with co-benefits on climate is an incentive to turn down the thermostat for buildings' heating by 1°C. In parallel, most Member States have implemented short term measures to shield consumers from the direct impact of rising prices. In the case of oil and gas this can be considered as direct support or subsidies to fossil fuel which could delay the transition to alternative fuels.

The war in Ukraine amplified the explosion of natural gas prices while also causing a security of supply crisis. With more than 150 bcm, Russian imports account for almost 40% of total annual natural gas imports, which is roughly equivalent to the gas consumption of the EU power sector⁹. The uncertainty around the role of natural gas in the EU's energy system is rising. In early February, the European Commission proposed to label natural gas as a transition fuel under the EU Taxonomy and a few weeks later the European Commission presented options to decrease dependency on Russian imports and more generally on natural gas in its REPowerEU plan.

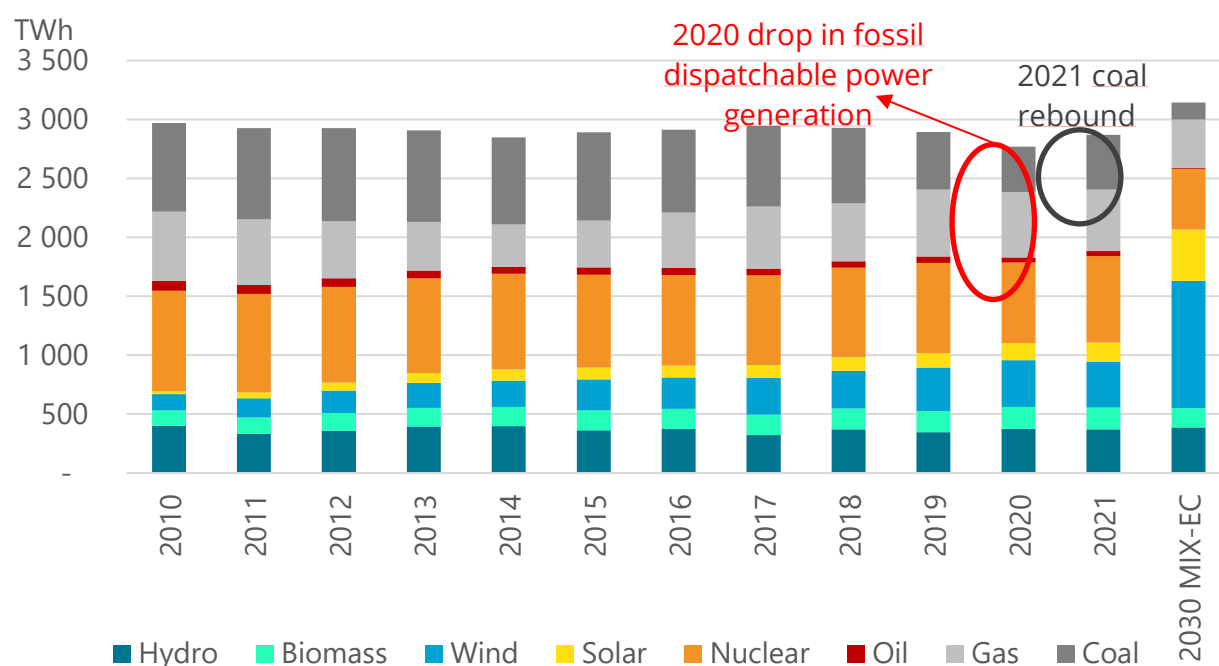
⁹ *Enerdata, Global Energy and CO₂ Data*

4. Power Generation: no silver bullet to decrease the share of natural gas in the EU power mix

The main challenges of natural gas posed by recent crises and the energy transition lay on the EU's power sector. With around 20% of power generation (Figure 5), gas-fired power plants play a key role in the power mix and offer flexibility to balance the grid, given it is a dispatchable technology with relatively high short term marginal costs. The main drivers of natural gas power generation in the short term depend on the general electricity supply/demand balance and the relative competitiveness against other dispatchable technologies.

The recent crises impacted several of these drivers, which has resulted in a decrease in natural gas power generation in both 2020 and 2021 (Figure 5). In 2020 this decrease was a direct consequence of the pandemic that hit the global economy and electricity demand. In 2021 it is mainly linked to a switch to coal power generation due to the deterioration of gas-fired power plant competitiveness with skyrocketing natural gas prices, despite the economic recovery and a lower wind output.

Figure 5: EU power generation mix



Source: [Enerdata, Global Energy and CO₂ Data](#)

In the short term, emergency solutions are operated:

- A slow-down in the coal phase-out, with a negative impact on current GHG emissions, although covered by the EU ETS
- A possible nuclear extension in Germany
- A limitation in electricity demand

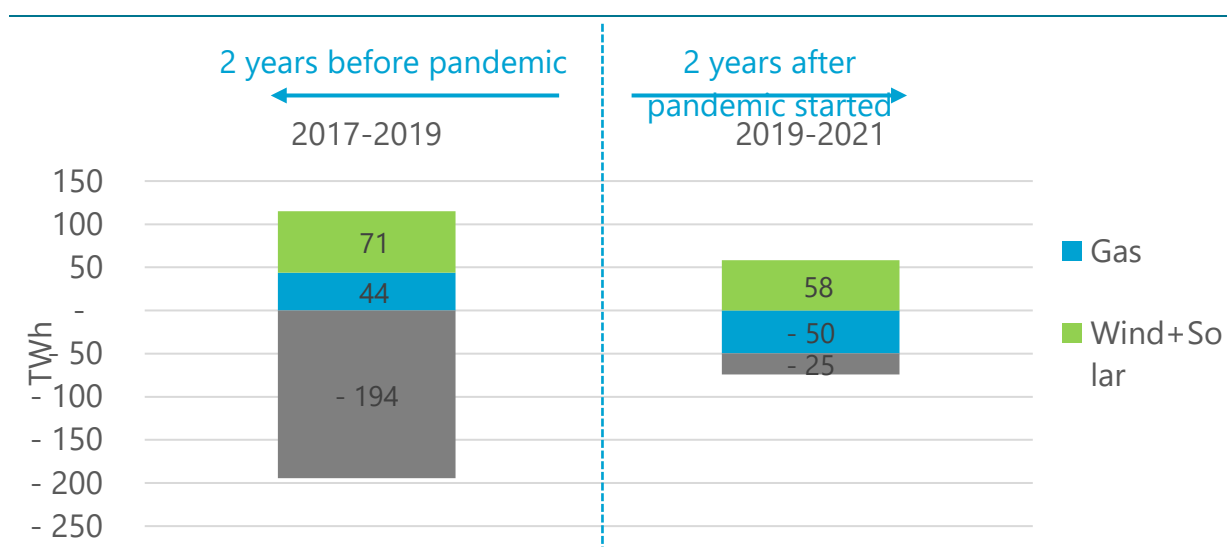
5. Coal phase-out: a persistent slow-down?

A focus on the two years that follow the beginning of the pandemic shows that the growth in solar+wind power generation roughly balance the decrease in gas power generation (Figure 6). However, the two years that precede tell a different story:

- Coal phase-out required much more than the additional solar+wind additional power generation to be cancelled out in 2018 and 2019. After the Covid-19 outbreak, coal phase-out has almost stopped compared to the previous period. Looking more closely at 2021 and the partial recovery from the pandemic, we observe that the increase in coal power generation (+20%) more than offsets the drop in gas power generation to support the rebound in electricity demand.

Growth in solar+wind power generation has slightly slowed down after the Covid-19 outbreak mainly due to poor wind conditions.

Figure 6: EU power generation variation



Source: Enerdata, calculations from [Global Energy & CO₂ Data](#)

Understanding the impact of Covid-19, the Ukrainian crisis, and the surge in energy prices on the future of the EU power mix requires sorting out structural trends and conjunctural factors.

Skyrocketing energy prices are the main conjunctural driver. Fuelled by the economic recovery (temporary by nature) and the Ukrainian crisis, it is expected to extend up to 2024-2025 by looking at current future prices. It is possible to anticipate and already observe some consequences:

- Coal power generation is more competitive than gas, despite relatively high CO₂ prices;
- High fossil fuel prices could boost renewable penetration in the mid to long term with revised objectives;
- High electricity prices, bearing considerable consequences for the industry in particular, could impact electricity demand and worsen EU economic competitiveness. In the long term this could accelerate efforts towards energy efficiency.

The dependency on Russian gas is a more structural driver as the war in Ukraine has shown. Several plans were set up to drastically reduce natural gas imports from Russia. In terms of natural gas end-use, the main options are sufficiency (decrease thermostat temperature), energy efficiency and electrification (the European Commission's REPowerEU plan) or a switch from

natural gas inputs in the power system (IEA 10 points plan¹⁰). Several EU Member States (including Germany and Italy) explicitly mentioned the option to delay the coal phase-out in the short-term. However, in the short-term the switch from gas to coal could have a limited impact in terms of carbon budget since these emissions are covered by the EU Emission Trading Scheme.

In the longer term, structural changes of the EU power mix do not seem to be impacted by recent crises and so far, we have not observed adjustments in long-term coal phase-out policies. Overall, coal's comeback into the EU power mix underscores a structural weakness (the dependency from Russian gas) but it could also just be a temporary option. The role of natural gas in the power mix as a transition fuel would depend on how fast EU natural gas supply can be diversified and how fast renewables can be ramped up.

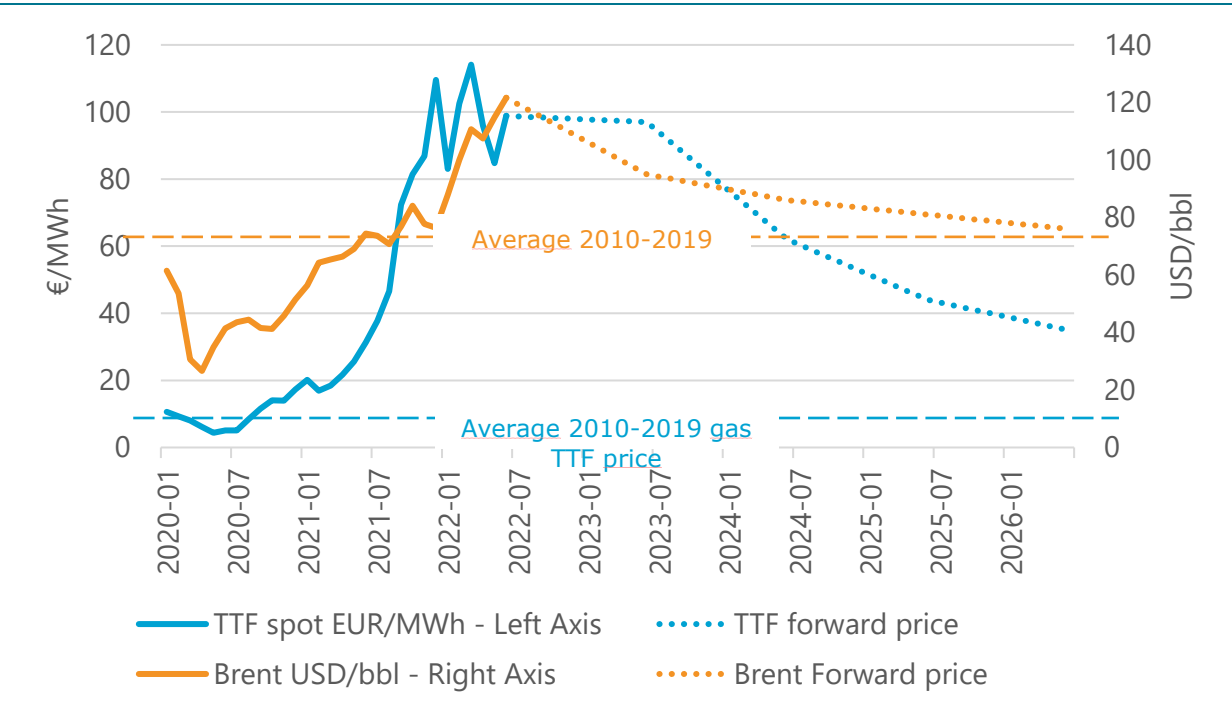
6. The EU's Gas crisis: high prices, but promising alternatives in the long run

What are the price signals?

Inflation and the economic slowdown are expected to lower oil demand and release pressure on oil prices. The European gas market will remain tight in the short term.

The Ukrainian crisis has reinforced the pressure on natural gas prices. Future gas prices indicate that this situation could extend beyond 2024.

Figure 7: Projection of European gas price and Brent price from forward price



Source: Enerdata, Energymarketprice, as of 28th of June 2022

¹⁰ <https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas>

The forward price for Brent is expected to decrease in the near-term, due to:

- the current economic slow-down and potential new lockdowns in China reducing the demand
- a reduction of oil supply deficit with increasing outputs different from Russia

Regarding European gas prices, a stagnation at a very high level is expected for at least one year due to the constrained situation in Europe, having no supply alternatives. The European market is:

- trapped with the unilateral Russian decisions: for instance, in mid-June 2022, Russia decided to cut exports by 60% through Nord Stream 1.
- exposed to adverse events such as LNG outages: for instance, Freeport US terminal was damaged by a fire in early June and operations have been suspended until Q4 2022. This is a key LNG terminal for European imports.

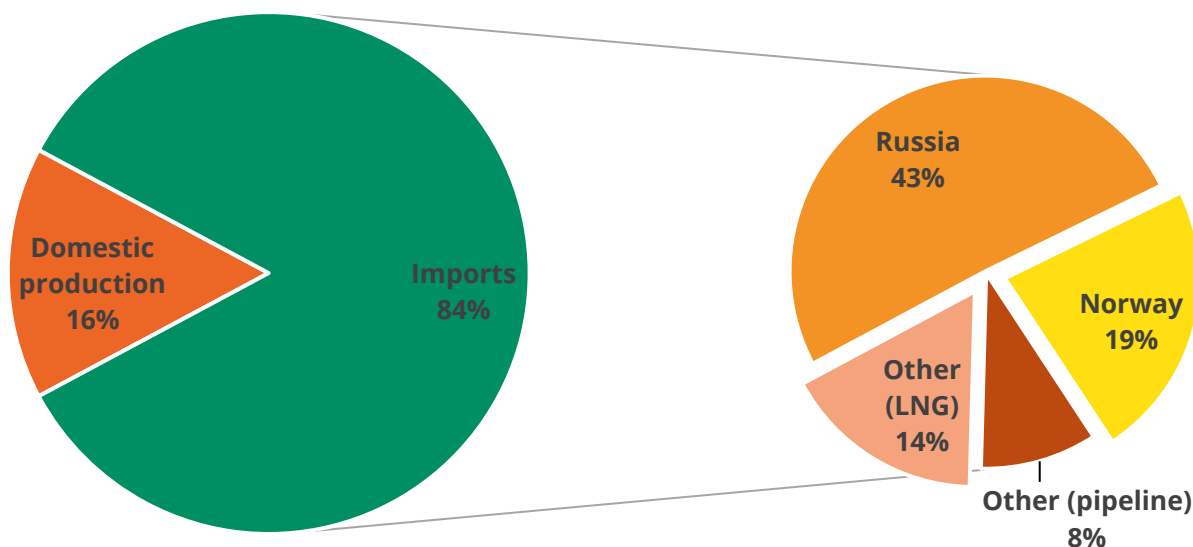
In the mid-term, up until 2026, forward gas prices are not expected to return to the 2010-2019 average prices.

The main issue for Europe will be to face the winter of 2022, with the two following main challenges:

- Filling the gas storage before heating season (November)
- Implementing urgent and specific actions to decrease the need for gas

How to dispense with Russian gas by 2030? The key role of energy efficiency and sufficiency

Figure 8: Source of natural domestic gas consumption in the EU in 2019



Source: Enerdata, Cedigaz

Breaking down flexibility options highlights the crucial role of demand

Imports account for more than 80% of natural gas domestic consumption in the EU.

- Russia alone represents 40% of gas supply (more than 90% of which from pipelines)
- The share of LNG is growing significantly (1/4 of total import volumes)

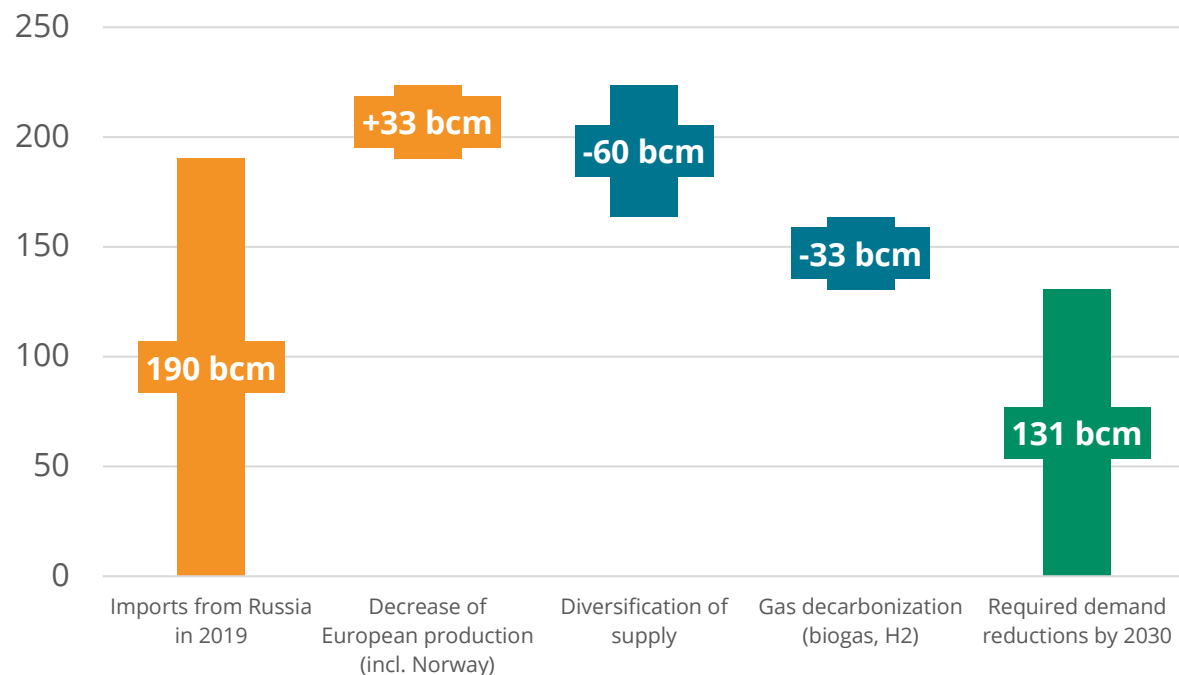
Norway (55%) and the UK (19%) represent most of the European production

- In the EU, domestic production only accounts for 16% of consumption
- Including Norway, domestic production in Europe represents more than 40% of total consumption

Breaking free from Russian natural gas dependency means:

- Reducing demand for natural gas
- Diversifying gas supply

Figure 9: Potential substitutes of Russian imports in EU gas supply by 2030



Source: *Enerdata, Cedigaz, European Commission*

European gas production is expected to decrease. In particular, Norway's production is expected to drop near to 90bcm/year around 2030 (vs. 120bcm/year in 2019).

To counter that, LNG regasification capacities are expected to increase, but the supply could be limited

- 40 bcm/year of additional regas capacity already expected by 2023 (approved or under construction)
- Ramp-up of production from exporters, re-routing of existing exchanges realistic to some extent

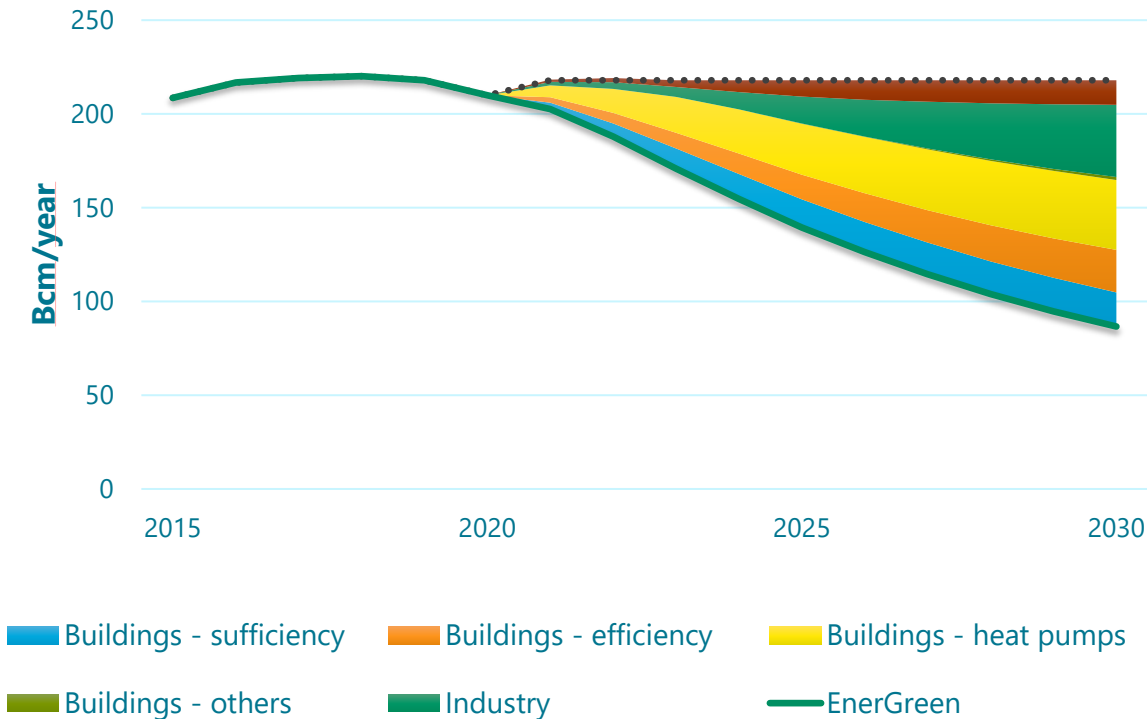
Also, new technologies have emerged. For instance, Biogas could play a significant role by 2030.

- Around 30 bcm/year of biomethane by 2030 according to **EnerFuture scenarios** (limited development of H₂)

Nonetheless, alternative supply sources will not suffice to meet decarbonization objectives, and a huge demand reduction is required. The European Commission fit-for-55 Mix scenario already

anticipated around 90 bcm of demand reduction between 2019 and 2030. It turns out, however, that significant additional efforts will be required.

Figure 10: Main final demand levers by 2030 in EU to reduce natural gas demand (EnerGreen scenario)



Source: Enerdata, EnerFuture scenarios

The **EnerGreen** scenario is an EnerFuture scenario with the most ambitious hypothesis, presuming stringent climate policies which would maintain global warming below 2°C.

EnerGreen allows for natural gas demand to decrease by 130 bcm by 2030. While this scenario was not based on the need for Europe to become independent from Russian gas, the figures match: final demand could help cease dependence on Russian gas imports.

Ending reliance on Russian gas could be largely addressed by demand-side actions

- **Heat pump** roll-out to play a key role as a driver of both efficiency and decarbonisation in buildings heating needs
- **Energy sufficiency** is a potentially **significant driver in the short term** if unlocked
- Industry’s potential for electrification, energy efficiency and circularity/material efficiency can contribute massively
- **Boost of energy efficiency and sufficiency** in electricity uses despite electrification

Decreasing power generation from gas fired power plants is another option in the mid-term (2025-2030). It will depend on the penetration of renewables in the mix and the ability of EU Member States to reach EU optimistic objectives, reinforced in the REPowerEU plan.

Finally, by 2030 we could expect a relaxed LNG market and a **successful diversification of supply.**

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ABOUT EBF



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