BRIEFING

EU CAN STOP RUSSIAN GAS IMPORTS BY 2025

ACCELERATING CLEAN ENERGY AVOIDS FOSSIL LOCK-IN

CONTACTS

Sarah Brown, Senior energy and climate analyst at Ember — sarah@ember-climate.org

Bram Claeys, Senior Advisor at RAP — bclaeys@raponline.org

Domien Vangenechten, Policy Advisor on industrial transition at E3G — domien.vangenechten@e3g.org

Marta Lovisolo, Policy Advisor on Renewable Energy Systems at Bellona — marta@bellona.org

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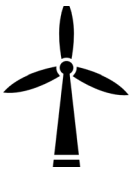
As organisations we stand with the people of Ukraine in their suffering and defence against the senseless aggression by the Russian government. Its decision to invade Ukraine puts into sharp contrast the deep entanglement between energy, security and geopolitics. Now more than ever the European Union needs unity and resolve in its response and a focus on resilience in the face of interlinking crises.

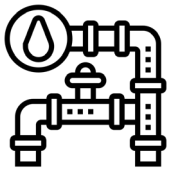
This briefing identifies the indispensable role clean energy solutions play in rapidly ending the EU's reliance on fossil gas imports from Russia.[1]

KEY FINDINGS:



CLEAN ENERGY AND ENERGY EFFICIENCY CAN REPLACE TWO-THIRDS OF RUSSIAN GAS IMPORTS BY 2025.

Russian gas imports can be cut by 66% by delivering the EU's Fit for 55 package and accelerating the deployment of renewable electricity, energy efficiency and electrification. This is equivalent to a total reduction of 101 billion cubic meters (bcm). An urgent uplift in policy is now required to achieve the necessary level of implementation.



NEW GAS IMPORT INFRASTRUCTURE IS NOT REQUIRED.

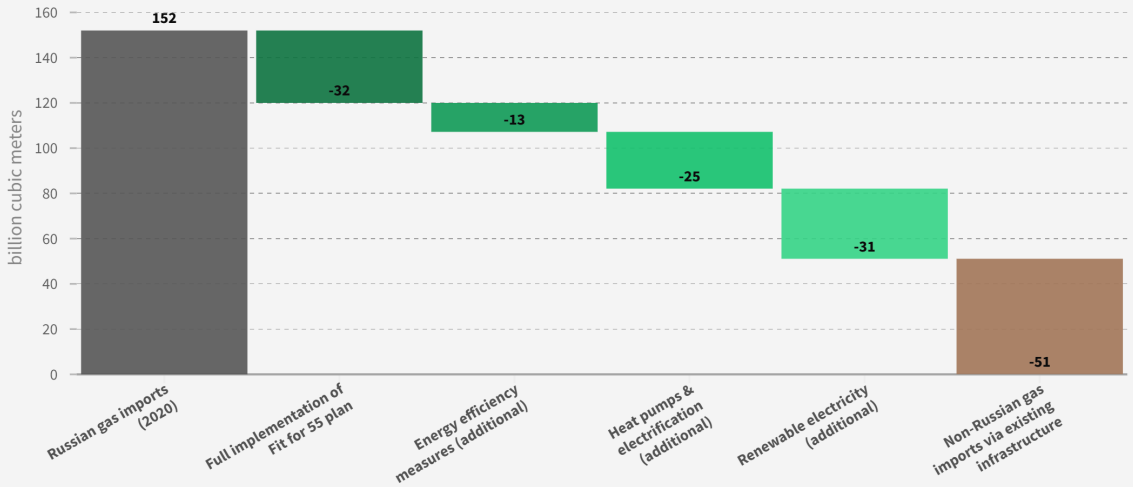
Security of supply and reduction of Russian gas dependence does not require the construction of new EU gas import infrastructure such as LNG terminals. Alternatively sourcing 51 bcm of gas imports via existing assets is sufficient.

COAL POWER DOES NOT NEED TO BE EXTENDED.

The above measures would enable the EU to achieve the necessary decrease in fossil gas demand without slowing the decline of coal-fired electricity generation.

EU can stop Russian gas imports by 2025

Russian gas imports cut by 2025 through the implementation of Fit for 55 plus additional clean energy solutions



Sources: Analysis by Bellona, E3G, Ember and Regulatory Assistance Project (RAP) • EU Commission model-based projections supporting the Fit for 55 policy initiatives (MIX scenario)

KEY RECOMMENDATIONS

01 // POLICY

Make investments in energy efficiency an energy security priority and increase the ambition of and fast track key renewable energy and efficiency policy in the EU "Fit for 55" package.[2] Identify latent reduction potential that can be fast tracked in line with climate targets, in particular in industrial end use of gas, inefficiencies in gas use (transformation losses, methane leakage), and through electrification of end-uses.

02 // SUPPORT

Support the roll out of renewables and electrification with investment programmes, administrative streamlining and a better market for demand side flexibility as well as long-term contracts. Clarify financial resources available to clean energy solutions under REPowerEU. Ensure that recovery funding allocated for clean energy is used to that effect.

03 // CAPACITY

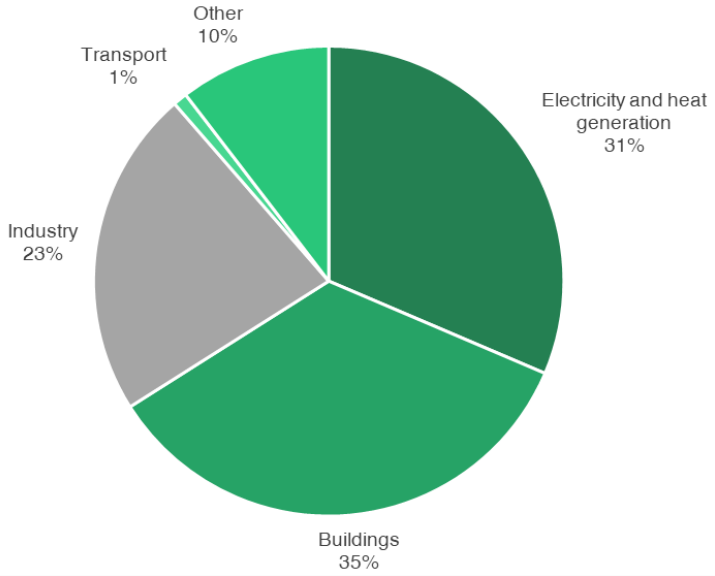
Put in place capacity to monitor and respond to low carbon supply chain risks and scale skilled workforce. Put in place European Commission capacity for a whole economy approach to driving and monitoring progress. Ensure equity in the energy response.

Counterproductive policies should be identified and tackled. Incentives that currently deepen or perpetuate gas consumption need to be replaced with investment support for clean heating. It is of paramount importance to avoid infrastructure or contractual gas lock-in, as the "substitution" effect is expected to decline sharply post 2025.

001. // SITUATION

EU gas imports totalled 400 billion cubic meters (bcm) in 2020,[3] of which 152 bcm came from Russia (38%).[4] Most of this gas is supplied via pipeline, although Russia has expanded its liquified natural gas (LNG) export business over the last few years. EU consumption of gas for energy use is dominated by buildings (35%) and electricity and heat generation (31%), with most of the remainder used for industry (23%).[5]

2020 GAS CONSUMPTION BY SECTOR (EUROSTAT)



In 2020, just under two-thirds of gas consumption was available for final end use, the rest was required for transformation and energy sector input. The relative share of gas available for final use has declined significantly over the last seven years, from 71% in 2014 to 64% in 2020, pointing at an overall efficiency loss in the EU gas sector.[6] Final EU gas demand is expected to decrease by 32%-37% by 2030 as a result of "Fit For 55" climate targets.[7]

EU fossil gas imports totalled 400 bcm in 2020,[8] out of which 152 bcm came from Russia (38%).[9] Most of this gas is supplied via pipeline, although Russia has expanded its liquified natural gas (LNG) export business over the last few years. EU final consumption of gas for energy use is dominated by households (41% - cooking, heating) and industry (38%), with most of the remainder used for power generation (18%).[10]

The current crisis has multiple origins. Already in summer 2021, gas prices in Europe were surging due to low reserves after the winter of 2020-2021 and fast economic recovery after the COVID downturn in 2020. The skyrocketing gas prices also drove up electricity prices. To a lesser extent, increased CO2 prices and unusually low renewables output also played a role.[11] This comes amid a tight LNG market, in which 70% of LNG supply is tied up by long-term contracts.[12] Many in Europe have for years looked at the degree of dependence on gas from Russia as an over-reliance, strictly from the point of view that single point risks on any energy system are best avoided if possible. The Russian invasion of Ukraine and the role of fossil fuel exports in funding the Russian political elite and its aggressions, have converted this into a strong imperative to cut dependence on Russian gas.

Compared to previous threats to EU fossil gas supply (2009, 2014), **the EU has a much broader range of response measures available. Clean solutions are now mature and have become mass markets.** Renewable energy costs have plummeted and the heat pump markets reached annual sales of about 1.8 million installations,[13] which is 25% of the EU heating market. This momentum comes just as substantial financial resources – a response to COVID – are being injected into the economy via the EU's Recovery and Resilience Facility (RRF). This has created an opportunity to direct those funds into the solutions that have the most positive impact for the recovery and that tackle the EU's gas dependence and price exposure. It also comes with challenges – notably labour shortages and supply chain constraints already visible during COVID but in part exacerbated by the complete isolation of Russia from global markets and the devastation the war causes in Ukraine.

002. // SCOPE OF THE ANALYSIS

The scope of this briefing is to analyse the accelerated reduction of fossil gas dependence, on a medium-term time horizon: one to four years. This briefing is intended as input for ongoing policy discussions in the European Council, Parliament and Commission as well as for national level responses to the crisis. Therefore, we focus on the EU27.

Russia is an important supplier of oil, coal and minerals to Europe. Yet, fossil gas imports pose specific challenges due to the EU's high dependence on pipeline gas imports and the tight global markets when it comes to flexible supply.[15] Gas prices directly impact EU citizens given the high share of gas in home heating, at a time when energy poverty is already significant. We identify a clean energy policy portfolio to accelerate gas demand reductions by 2025. As recent analyses underexplored the potential contribution of demand side efficiency and electrification, this analysis includes demand side actions such as energy efficiency investments, electrification of heating and demand side flexibility. On the electricity generation side, the focus is on scaled up and accelerated solar and wind.

SOME LIMITATIONS OF THIS ANALYSIS INCLUDE:

It focusses on final consumption for energy use only. Final consumption for non-energy use accounted for 4% of gas use in 2020 and accounts for 14% of all gas use in industry.[14] Options to reduce reliance on gas exist, such as hydrogen as a feedstock or establishing more circular and material-efficient supply chains. They may however be slower to ramp up.

This is a stylised analysis looking at replacement potential. It makes some simplified assumptions around energy system interactions to conclude where replacement of gas takes place (explained in the annex). The assumptions are conservative but cannot replace a whole energy system model.

This analysis incorporates an approach focussed on clean energy solutions creating permanent gas savings. This provides additional insights compared to recent analyses by the European Commission,[16] the International Energy Agency[17] or Bruegel.[18]

003. // ASSUMPTIONS BEHIND THE ANALYSIS OF GAS IMPORT SAVINGS

The identified measures to accelerate clean energy deployment reflect existing "Fit for 55" plans and commitments but accelerate and enhance them to rise to the current challenge of rapidly reducing the EU's fossil gas dependence. The assumptions have been checked with relevant industry bodies and take into account what can realistically be delivered in the short to medium term over and above ''Fit for 55 ambitions''. We deliberately focus on clean solutions on both the supply and the demand side, as the latter have the largest potential to immediately reduce costs to consumers and increasingly insulate them from price volatility.

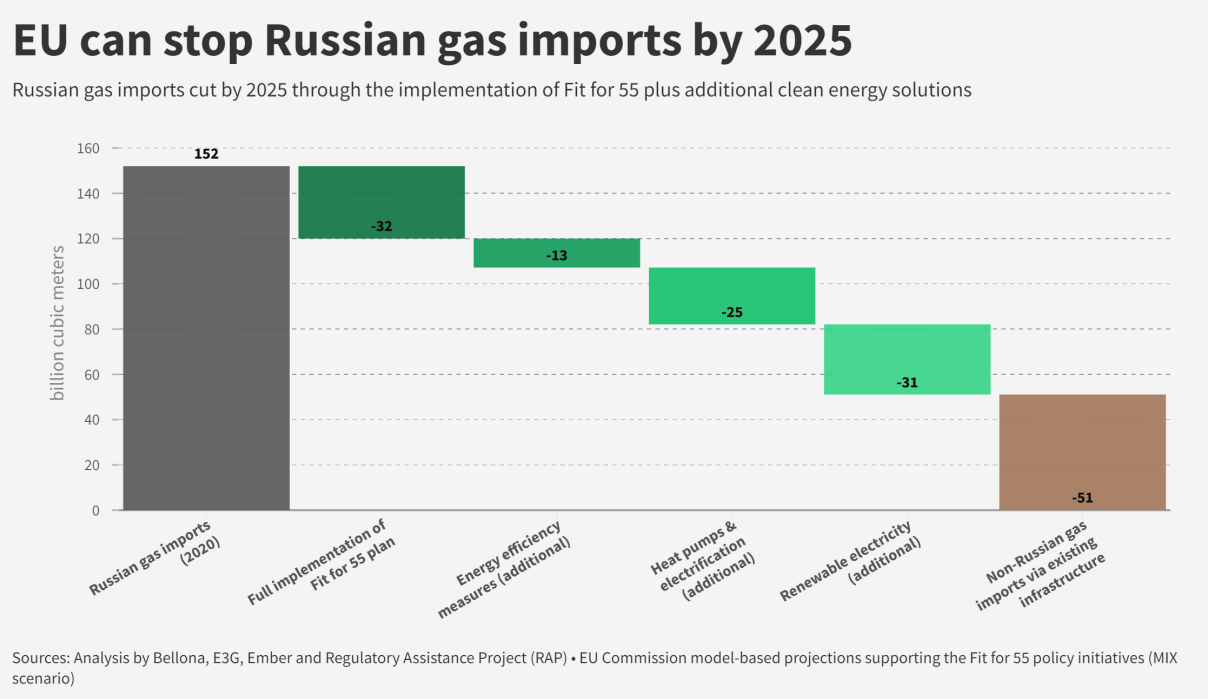
Over-reliance on fossil fuels, import dependence and international market volatility have contributed to the current geopolitical crisis. The effects of this are felt first and foremost by the most vulnerable in our societies. It is therefore of paramount importance to reduce our economies' reliance on fossil fuels and avoid further lock-in, such as could be the result of rushed decisions to build new LNG-import terminals, speed up new gas transmission pipelines, or reconsider fossil fuel extraction in Europe or scaling it in partner countries.

THERE ARE SOME DIFFERENCES BETWEEN OUR AND PREVIOUS ANALYSES:

- Campaigns aiming for behavioural change such as **"turning down the heat"** can be important to deliver a short-term demand reduction, e.g., by next winter. But their effectiveness is expected to fade over time. We therefore do not include reductions from behaviour in the analysis for 2025.
- We **achieve the necessary decrease in fossil gas demand in 2025 without compromising the EU coal phase out or extending the lifetime of nuclear power plants.** The intention of the Belgian government[19] to extend 2GW nuclear power for 10 years only impacts gas demand after 2025.
- The additional actions do not include the **scaling of hydrogen and biomass, which both play a central role in the European Commission scenarios and in the IEA 10-point-plan (biomass).** While they have their place in decarbonisation, they both come with significant risks, and hydrogen cannot deliver impact in the short term. Biomass scale up may enter into conflict with food production at a time when food prices are already soaring. In the short to medium term, gas savings can be maximised if direct electrification is prioritised to accelerate gas phase out in power rather than using it for renewable hydrogen production.[20]

See the technical methodology section for more details.

004. // FOSSIL GAS IMPORT SAVINGS



According to our analysis **there is sufficient potential via clean energy solutions alone to remove 66% of gas demand from Russia by 2025.** This requires increasing the ambition and fast tracking of "Fit for 55" targets as well as additional actions, detailed in the next section.

Net imports of fossil gas are projected to reduce by 32 bcm from 2020 levels by 2025 with the full implementation of the "Fit for 55" policy package (MIX scenario). **We find that this can be further decreased by 69 bcm through clean and efficiency solutions.**

Renewable energy sources, predominantly wind and solar, are critical to weaning the EU off Russian gas and fossil fuels. The current "Fit for 55" target for wind and solar capacity by 2025 is 533 GW (229 GW above 2020 levels). **We have identified that this can be increased by 158 GW to 691 GW by 2025. This equates to 31 bcm of reduced fossil gas demand, 20% of Russian imports.** Accelerated solar deployment is responsible for this substantial gain. Solar Power Europe has stated that permitting is key to enable the necessary huge uptick in solar installations. Our scenario also assumes wind capacity hits the target set out in the "Fit for 55" proposal, however deployment is currently lagging, and this must be addressed by the EU as a matter of urgency.

For comparison, the EU Commission's REPowerEU plan only envisages an additional 80 GW of additional wind and solar capacity deployed by 2030 (solely to enable higher production of renewable hydrogen), half the amount we identify as deliverable by 2025 with the right policy framework. The direct use of these additions for electricity would, at this stage, be most effective in reducing gas use – with a switch to renewable hydrogen as and when direct electrification potentials are maxed out. A much stronger and more immediate focus on removing delivery obstacles is required, alongside ensuring that the "Fit For 55" renewable targets are met. We welcome the Commission's initiative to provide guidance on speeding up renewables permitting due to be announced in May 2022, but more can and must be done at an EU and Member State level.

This analysis identifies significant potential for additional action on the demand side. Energy efficiency measures can deliver an additional 13 bcm by 2025 – with each unit of gas avoided directly translating into cost savings for consumers. Heat pumps in buildings can reduce gas demand by an additional 19 bcm. Ramping up the electrification of space heating and low- to medium- temperature heat processes can deliver an additional reduction of 6.5 bcm by 2025. **It is clear that these potentials are underleveraged in the REPowerEU plan and need more concrete measures to bring forward savings, alongside more ambition under ''Fit for 55''.**

The "Fit for 55" MIX scenario already assumes a 39% (152 TWh) decrease in coal generation from 2020 to 2025. Unlike other recent analysis, **our accelerated clean solutions pathway achieves the necessary decrease in fossil gas demand without slowing the decline of coal power.** This brings both climate and energy security benefits, as the EU is a large importer of Russian coal.

Our analysis also identifies that security of supply and reduction of Russian gas dependence **do not require the construction of new EU gas import infrastructure such as LNG terminals.** The 51 bcm of alternatively sourced gas imports can be channelled via existing, underutilised assets.[23] It is also less than the 60 bcm stipulated in REPowerEU. In this context, it is important that actions to bring in alternative fossil gas supply anticipate the temporary nature of this step, as ramping up clean measures will fast erode gas demand.

Between the "Fit for 55" package, expected to deliver 100 bcm in gas savings by 2030[24], and our analysis demonstrating that a 69 bcm reduction can already be achieved by 2025, the "substitution effect" away from Russian gas to other imports sources will likely evaporate fast after 2025. This means there is no justification for the EU **to lock in high price fossil gas contracts beyond this time horizon and new infrastructure would be unlikely to come online before then.** If fossil fuel commitments extend beyond this, they risk burdening consumers with high-cost imports and simply replacing one fossil fuel dependency with another.

005.// BOLD GOVERNMENT ACTION IS NEEDED TO UNLOCK GAS SAVINGS

Over the last decade, the tools available to the EU to respond to high gas prices and supply risks have diversified significantly. Renewables, heat pumps and energy efficiency have the added benefit to also build a more resilient Union in light of other crises – climate change, economic growth and health.

The EU has done this before. Without the efficiency measures of the last two decades, the EU's energy demand would be approximately 1,000 TWh (87 million tonnes of oil equivalent) higher today, equivalent to about a quarter of pre-COVID gas demand.[25] We must apply the same rigour and foresight today, while taking advantage of the tailwinds from a much more mature suite of clean energy solutions.

This will not happen autonomously and requires bold government action. The current "Fit for 55" package will not be sufficient to realise the full energy security potential from clean energy solutions by 2025. The ambition of "Fit for 55" proposals for the Renewables and Energy Efficiency Directives needs to be increased.

TEN KEY MEASURES TO REALISE THE ADDITIONAL POTENTIAL IDENTIFIED IN OUR ANALYSIS

1. **Increase ambition and fast track adoption of the "Fit for 55" package.** This is relevant in particular for the Renewables Directive, Energy Efficiency Directive, Emissions Trading System and the Energy Performance in Buildings Directive.

2. **Clarify financial resources to support clean energy solutions**. Ensure that allocated funding under the Recovery and Resilience Facility is used to that effect. Establish a facility for early, front-loaded release of Multiannual Financial Framework funds where delivery of gas savings can be accelerated.

3. **Make energy efficiency an energy security priority and scale action.** Energy efficiency has the largest potential to reduce cost impacts on consumers.[26] Consider opening existing funding resources such as the Connecting Europe Facility for scaling national energy efficiency programmes.

4. **Remove any incentives that currently deepen or perpetuate gas consumption.** It is a tragedy if government programs promote families to invest in ways that cement reliance on Russian gas on top of creating a stranded asset in their home which they may come to regret long before the end of its useful life. Examples include financial support for gas heating systems and special tax regimes or exemptions for industry. Replace them with investment support for clean heating, in particular for low- and middle-income families. Support innovative schemes such as on-bill financing, tax credits or heating appliance lease schemes.

5. **Support the roll out of renewables and heat pumps.** Establish concrete investment programmes, reduce administrative burdens and accelerate support for critical enablers such as grid infrastructure, demand side flexibility and better use of transmission networks and storage. Integrated regional markets can buffer fluctuating renewable resources across larger regions.

6. **Make low carbon supply chains an energy security priority.** A skilled workforce and input materials to the low carbon supply chain are critical to delivering this vision. The EU can enhance and scale Member States' efforts and can establish a cooperative approach with the United States and other partners on scaling supply chains.

7. **Ensure equity in the energy response.** Governments must ensure the costs and benefits of the transition are shared fairly among consumers. Increased carbon revenues or windfall profit taxes can be earmarked for investments in renewables and efficiency, as well as bill support for vulnerable customers. Enabling access to energy services can unlock bill savings for low-income families. Regulators should address energy poverty by designing fair network tariffs and ensuring suppliers of last resort are properly financed.

8. **Put in place a European Commission task force.** This could drive and monitor a whole economy approach so that supply chain bottlenecks can be anticipated and efforts streamlined across different parts of the Commission.

9. **Conduct analysis to identify latent potential that can be fast tracked.** In line with climate targets, in particular, analysis should be identified for industrial end use of gas, or inefficiencies in gas use (transformation losses, methane leakage) to line up even higher gas savings post 2025. Examples include increased monitoring, reporting, and best practices to reduce methane leakage from production to distribution, including identification of pipelines that can be decommissioned or upgraded.

10. **Avoid gas infrastructure or contractual gas lock-in.** The "substitution" effect from Russian gas to other sources is expected to decline sharply after 2025, meaning that additional import or other gas infrastructure will face rapidly declining utilisation.

DETAILED CRITICAL ACTIONS

Descriptions	Cross-cutting	Efficiency and fuel switch - residential	Renewable energy	Efficiency and fuel switch - industry
PREREQUISITES	Make securing supply chains for low carbon materials and critical raw materials a security priority (e.g., steel, semi-conductors).	End financial support for gas and hybrid heating systems. Scale up renovation advice with the Building Renovation Passport. Issue best practice guidance to Member States on potential savings from and mechanisms for promoting the rapid adoption of best-in-class energy efficient electrical appliances.	Streamline and reduce administrative and regulatory barriers: Solar: solar PV roof mandate. Wind: accelerated auctions for new capacity (on-/offshore)	Conduct analysis of potential for faster gas phase out in EU energy-intensive industries.
CRITICAL ENABLERS	Enhance the targets in the "Fit for 55" RED and EED legislation and fast track adoption and implementation. Reissue gas package proposal to support managed phase down of gas use.	Require Member State programmes supporting switch away from coal heating to exclude switch to gas. Ensure mandates reflect efficiency as security priority (product design, building codes). Deploy programme for quick building passports training and mobilise skills in army to deploy towards installation of heat pumps/renovation. Launch a dedicated Heat Pumps Accelerator or 'Sector Compact' to boost the market, skills and supply chains for heat pump manufacturing and deployment beyond business as usual.	Policies and regulations to support industrial customers to invest in additional renewables capacity, power purchasing agreements and on-site distributed generation. Auction for double sided contracts for difference, providing upside for governments in times of high energy prices. Support long-term contracts (Power Purchase Agreements) and better functioning forward markets. Set timeline for establishing integrated North Seas Grid infrastructure to enable effective trading of resources.	Allocate funding under the new Temporary Crisis Framework and the Innovation Fund to electrification of low-temperature heat processes. Invest in skills and workforce training to increase confidence in and enhance access to engineering expertise in electrification technologies. Expand national energy audit schemes and allocate funding to cost reducing energy efficiency measures for small- and medium-sized enterprises.
SOCIAL PROTECTION & COHESION	Secure sustainable financing of supplier of last resort. Invest in strengthening low carbon industrial base in Eastern Europe.	Target financial support towards vulnerable consumers with gas connection or those planning to switch away from coal or oil heating.	Unlock financial benefits of investing in distributed renewables via energy communities. Consider government backed long-term contracts (Power Purchase Agreements) for aggregated vulnerable consumers.	
PROCESS	1. Clarify financing of frontloading and scaling clean measures, consider mobilising fiscal resources. Untapped potential lies within the Recovery and Resilience Facility, of which large shares have not been disbursed yet and where Member States did not max out potential for energy efficiency13. Increased Emissions Trading System auction revenues as well as net increased VAT revenues can be an important source of funding. 2. Clarify process for identifying priority measures in line with EU objectives: • Use transparent, science-based principles for identifying projects with Member States, ensure civil society participation is possible where long-term choices or commitments are made. • Use contribution to wider resilience (longer price development, energy poverty, health, climate etc.) as key metric for prioritising funding and fast tracking. • Prioritise options that do not create fossil lock-in effects. 3. Establish an energy transition task force that works cross-Commission, linking together security, poverty, industrial strategy, external action and climate perspectives and focus on delivering time bound energy transition outcomes.			

006. // MID- TO LONG-TERM CONSIDERATIONS THAT REQUIRE DECISIONS NOW

The analysis set out above is focused on medium-term measures that will decrease EU fossil gas consumption in the next one to four years. However, there are policy decisions that need to be taken in the short term that are critical to maintaining the momentum behind reducing EU dependence on fossil gas imports beyond 2025. These include how we accelerate the deployment and optimal use of renewable hydrogen, scale up fuel and feedstock shifts in EU industrial processes, secure access to critical materials for the clean economy expansion, and maximise the potential from circularity, material efficiency and recycling.

- **Renewable hydrogen for use as industrial feedstock and energy storage**. Hydrogen has a key, strategic role to play in providing replacements for gas as feedstock, in high temperature heat processes and in long-term storage. Given its resource intensive production in a world where energy is scarce, a key challenge for the EU will be to find ways of allocating this strategic energy vector where it can provide the most value to energy security and decarbonisation.

- Renewable hydrogen is a key decarbonisation option for industrial sectors, where it is used as a feedstock or can provide high-temperature heat (e.g., chemicals and steel production), and for seasonal energy storage. For those sectors, the EU should continue to support the deployment of renewable hydrogen, focused on industrial clusters. Given the inefficiency of the hydrogen production process, however, it should be **carefully targeted to the sectors where no other viable decarbonisation alternatives, such as direct electrification, material and energy efficiency, are available.**

- **The role of circularity, material efficiency and enhanced recycling.** New approaches to design and improved efficiency of materials and fertilizers hold strong potential for fossil fuel demand reduction. In addition, increasing the share of materials that are reused and recycled would reduce how much steel, plastic and fertilizers we need in the first instance, displacing demand for gas as a feedstock in these sectors. Accelerating phase out timelines, bringing forward relevant regulations and investing in recycling infrastructure and processes could lead to significant additional reductions in gas demand.

- **The extent of EU interdependence with trade partners**.[27] In the wake of pandemic-driven supply chain disruptions and a major geopolitical shock to energy markets, there has been a tendency towards rhetoric focused on autonomy, self-sufficiency and sovereignty. This would however, merely change the type of risks and exposure (from global supply chain risks to exposure to disruptive events in Europe) instead of enhancing resilience. Moreover, the reality of limited access to raw materials to fully decarbonise an industry-heavy economy means that the EU will likely continue to be dependent on international supply chains for the transition. Investing in better low carbon supply chain risk management structures would enhance resilience and maintain Europe's global influence built on trade relationships.

007. // TECHNICAL METHODOLOGY

01 // FIT FOR 55 AS BASELINE

We have used ‘‘Fit for 55’’ data and targets, including energy consumption, electricity generation and installed capacity for 2020 and 2025, to determine a baseline from which we have calculated our accelerated clean energy solution pathway.

02 // BUILDING EFFICIENCY

Buildings are the largest gas-using sector in the EU27. There is significant scope to reduce heating demand through better energy efficiency, with potential savings through building fabric efficiency alone of 37%.[28] The rapid deployment of loft insulation could deliver a 14% reduction in gas demand of gas-heated homes.[29]

Total gas demand in buildings in 2020 was 1,315 TWh.[30] We assume 2.5% of this is used for cooking. The current renovation rate in Europe averages around 1% per year. Only 0.2% per year of the building stock undergoes a deep renovation.[31] In our scenario, we assumed doubling the pace of renovations as foreseen in the ”Fit for 55” MIX scenario, assuming an average renovation depth of 50% demand reduction.

03 // HEAT PUMPS

In 2021, almost 2 million heat pumps were installed in Europe.[30] For 2022, market growth of 25% to 2.5 million heat pumps is assumed, with figures to increase to 3.5 million in 2023 at 40% growth, 5.3 million in 2024 at 50% growth, and 7.4 million in 2025 at a 40% increase in unit sales. These figures were validated by the European Heat Pump Association as challenging but achievable with significant effort and policy support.

Assumed efficiency of new heat pumps in domestic buildings is a Seasonal Coefficient of Performance (SCoP) of 3.3 and 3 in non-domestic buildings. We assumed the same electricity mix as in 2020, with a share of 20.6% of electricity from gas [31], and factored in line losses in transmission and distribution using an average from the top five gas using countries in the EU27 [32]. The additional gas demand is factored into the savings calculated, assuming an average efficiency of gas plants of 50%.

Moving from gas heating systems to heat pumps and district heating powered by renewable electricity could reduce gas consumption by approximately 80%, if accounting for the current electricity mix and the additional gas-fired power generation required for electrification. [33]

For the baseline we assumed the same level of deployment as modelled in the Impact Assessment of the ‘‘Fit for 55’’ proposals.

04 // INDUSTRY – ENERGY EFFICIENCY, HEAT PUMPS AND

Total gas demand for energy use in industrial sectors [34] was 858 TWh in 2020. [35] Based on available literature, we assume that 25% of this total gas use goes to space heating, 4% to low-temperature heat processes (<100°C), 29% to medium-temperature heat processes (100°C - 500°C) and 42% to high-temperature heat processes (>500°C). [36]

While considerable energy efficiency improvements have been made in recent decades, significant potential remains. The energy savings potential of measures with a 5-year payback time amounts to 7%-13.5%, depending on the industrial sector in question, while implementing measures equal to the full technical potential would increase this to 17%-26%. [37] In our scenario, we assume that those measures with a 5-year payback time are rolled out in full by 2025. As the saving potential for improvements in final energy demand does not differentiate between energy carriers, we assume that realised savings are proportional for each energy carrier. While the payback time is considerably shorter under current gas prices, we do not factor in energy savings beyond the 5-year payback time.

Electrification of processes that operate at low and medium temperatures, including cooling, space heating, steam generation and drying, could displace over half of EU industries' gas consumption. [38] The technologies required, such as heat pumps, chillers and electric boilers are mature, cost-effective, especially at current gas prices, and readily available. They require, however, much faster deployment, investment in installation, the skills needed to operate them and, in some cases, redesigning industrial plants and processes to accommodate them.

In our scenario, we assume the same deployment rate for heat pumps for space heating in industry as for heat pumps in other use cases (domestic, commercial), see section above. We further assume a ramp-up of the electrification of low- and medium-temperature heat processes over time (annual growth rate of 50%), in total replacing 8.13% of gas use for these purposes by 2025.

05 // RENEWABLE POWER

There is significant potential to accelerate the deployment of wind and solar, above what current market forecasts expect to be delivered by 2025. This could meaningfully reduce EU gas demand by displacing the use of gas in the power sector. Solar Power Europe have indicated that current market trends are already set to deliver more solar capacity by 2030 than the European Commission is targeting in Fit for 55. This business-as-usual scenario would see 158 GW of new solar added by 2025 which, according to a recent analysis, could be increased to 320 GW if immediate measures are taken to streamline permitting and incentivise deployment. On the other hand, wind power additions are lagging behind the required pace for Fit for 55, expected to reach only 18 GW per year by 2025, compared to a required average this decade of 30 GW per year.

Geothermal: data of the European Geothermal Energy Council (EGEC) identifies a pipeline of around 1 GW of geothermal power plants by 2026. We did not include this potential as there are remaining hurdles to overcome in planning, permitting and operations processes. But it shows innovative technologies can materialise and contribute additional gas savings.

REFERENCES

1 This briefing has been authored by Sarah Brown (Ember), Domien Vangenechten, Johanna Lehne and Lisa Fischer (E3G), Bram Claeys and Jan Rosenow (RAP) and Marta Lovisolo and Keith Whiriskey (Bellona).
2 In particular: the Renewable Energy Directive (RED), Energy Efficiency Directive (EED), Energy Performance of Buildings Directive (EPBD)
3 https://ec.europa.eu/eurostat/databrowser/view/nrg_ti_gas/default/table?lang=env
4 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_GAS__custom_2273651/default/table?lang=en
5 Eurostat, NRG_CB_GAS, 2020 figures, accessed March 2022
6 This may be due to the increasing share of LNG imports over the same time period, which entails additional conversion losses. https://www.eia.gov/todayinenergy/detail.php?id=51258
7 https://www.e3g.org/publications/phasing-down-gas-use-in-europe/
8 https://ec.europa.eu/eurostat/databrowser/view/nrg_ti_gas/default/table?lang=en
9 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_GAS__custom_2273651/default/table?lang=en
10 Eurostat, NRG_CB_GAS, 2020 figures, accessed March 2022
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