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PRIORITIES OF THE CENTRAL AND EASTERN EUROPEAN COUNTRIES AND GERMANY

Agata Łoskot-Strachota

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Contents

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I. INTRODUCTION: TRANSITION IN TIMES OF WAR

In recent years, EU energy markets and energy policy have been shaped by two parallel and profound processes: the energy transition and a series of unprecedented crises that have altered the international landscape, including in terms of security, trade relations, and economic competitiveness. While both processes are fundamentally reshaping European and global energy systems, they differ significantly in nature. The energy transition – at least in its initial conception – is a planned, long-term strategy, whereas international turbulence has been largely unforeseen and continues to unfold. This clash between long-term objectives and short-term challenges is a key factor in shaping today's EU energy policy.

The pursuit of climate neutrality by 2050, and of the resulting sharp reduction in the EU economy's emissions, has long been a priority – effectively a dogma – within the union. As a direct consequence, energy policy has become closely intertwined with climate objectives, forming the EU's energy and climate policy framework. The architecture of EU instruments – including climate targets, the emissions trading system, the "greening" of EU finance, energy union governance, and external relations – is designed to facilitate this transition. The legal acts which underpin these measures, developed within frameworks such as the EU's Green Deal, the Fit for 55 package, and REPowerEU Plan, define the operational parameters for the entire EU and its member states, including those in Central and Southeastern Europe.

At the same time, energy system transitions aimed at reducing emissions and enhancing self-sufficiency are underway worldwide, including in the United States and across Asia (China, Japan, South Korea). This simultaneous global shift is driving increased competition in the development of new clean technologies and access to critical raw materials. The diverse approaches adopted by different countries highlight the advantages and drawbacks of various models for supporting the energy transition, as well as the broader process of transforming economies and societies.

In parallel, the past few years have also been marked by deep international crises – COVID-19, Russia's invasion of Ukraine, and instability in the Middle East – each of which has posed challenges and exerted pressure on markets and energy systems. In particular, Russia's full-scale aggression against Ukraine triggered an energy war between Russia and the West, leading to an unprecedented energy crisis. These developments have caused a fundamental

transformation of global supply chains and energy linkages. Europe has been the most impacted. Russia was the EU's largest supplier of raw materials and fuels (of oil, gas, coal, nuclear fuel, diesel, and LPG) for decades and deliveries from there have been drastically reduced. Pipeline imports, which previously accounted for a significant share of all EU imports, have largely been replaced by maritime shipments from alternative sources.

The impact has also been felt on the demand side, with energy savings, consumption reductions and even demand destruction, and which have been accelerating the energy transition. Prices surged – at times to record levels – while volatility intensified. Uncertainty in energy markets has become the norm due to the ongoing war in the east, the EU's lingering energy dependencies on Russia,[1] and the hybrid nature of tensions between Russia and the West, including repeated damage to critical energy infrastructure. Additional instability in key energy-producing regions, such as the Middle East, and political shifts – including the dynamic and unorthodox policy of a Donald Trump administration and his efforts towards ending the war in Ukraine and normalising US-Russia relations – further contribute to market uncertainty.

Europe has been particularly affected by these processes, finding itself at the epicentre of events and the accelerating transition while remaining highly dependent on imported energy resources, new supply routes, and alternative suppliers. This has sparked questions about the EU's energy policy – its priorities, structure, and effectiveness.

In the early years of the war, the European Commission used the energy crisis to accelerate the energy transition, presenting the EU's Green Deal and decarbonisation as solutions not only to climate challenges but also to energy security concerns. It also introduced a package of new regulations aimed at speeding up decarbonisation.

However, the economic costs of profound economic and market shifts, as well as the ongoing war beyond the EU's borders, have become increasingly relevant. While the goal of climate neutrality remains politically uncontested within the EU, questions are growing about whether the pace and structure of the actions stemming from the Green Deal allow Europe to maintain – or regain – its economic competitiveness, strengthen EU defence industry and

[1] A. Łoskot-Strachota *et al.*, *Unfinished de-russification. The remnants of energy ties between the EU and Russia*, OSW, Warsaw 2024, osw.waw.pl.

ensure a sustainable energy transition, both at the EU level and within the individual member states.

More than ever, it has become crucial to develop a strategy that enables the simultaneous achievement of the three traditional objectives of energy policy, thus balancing the so-called energy trilemma: achieving an environmentally sustainable transition, ensuring energy security, and maintaining affordability and economic competitiveness. Key strategic questions now revolve around how to achieve this balance and, in the case of (temporary) difficulties, what hierarchy and sequencing of goals and actions should be adopted. These debates are not only taking place in Brussels but also in every member state. Understanding and accommodating the core interests and objectives of all EU countries appears to be fundamental when developing an effective and broadly acceptable EU-wide strategy.

In this study, we aim to address the key questions regarding the main successes and challenges, interests, and risks associated with energy policy – broadly understood – in the Central and Eastern European countries and Germany. We also examine which of the three objectives of the energy trilemma is most important to them and what implications this may have for EU energy policy.

The report consists of three parts. The first section compares the situation in the region's countries and Germany across selected indicators, assessing each of the three dimensions of the energy trilemma: transition, energy security, and energy affordability. The second part presents a series of case studies – concise analyses of each country's most significant achievements, challenges, and energy interests. Finally, the report concludes with key findings on both the similarities and differences between the countries, their main objectives, and the implications for EU energy policy.

In this report, Central and Eastern Europe refers to the EU member states of the region: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. Germany is also included in the analysis. While it is sometimes classified as part of Central Europe (along with Austria, which is not covered here), Germany differs from the other countries in the region due to the scale and structure of its economy. At the same time, it serves as an important partner and a key point of reference for the region's energy policies.

The data used in this report comes primarily from Eurostat and the International Energy Agency (IEA). Most of it is from 2022 – the most recent year for which comprehensive and comparable data was available for all the analysed countries at the time of writing. However, it is important to note that 2022 was an exceptional year, marked by Russia's full-scale invasion of Ukraine and an unprecedented energy crisis. These events temporarily affected various energy indicators, including consumption levels, prices, and the electricity generation mix – for instance, some countries saw a temporary increase in coal-based power generation.

II. CENTRAL AND EASTERN EUROPE AND GERMANY IN THE CONTEXT OF THE ENERGY TRILEMMA

1. The energy transition in Central and Eastern Europe and Germany

The energy transition is likely the most significant long-term process reshaping not only energy markets and systems but also entire economies and international economic ties within the EU, Europe, and beyond. As a result, it is crucial to accurately assess the progress of individual EU countries in this transition and understand their interests in relation to it, as well as to the current structure of the EU's energy and climate strategy.

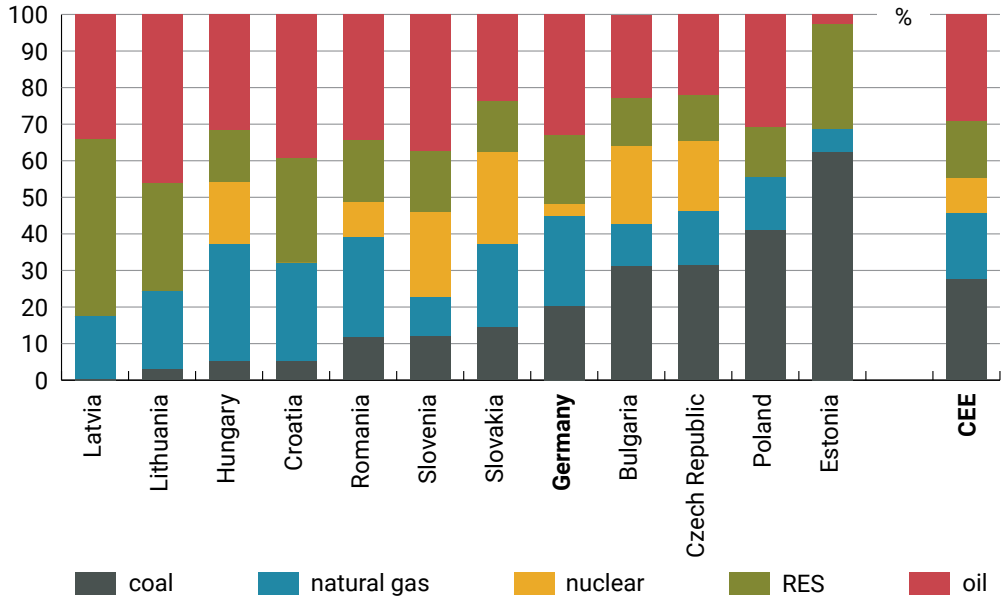
The ongoing energy transition aims to reduce emissions and carbon intensity across virtually all sectors of the EU's economies, with the ultimate goal of achieving climate neutrality by 2050. So far, due to EU regulations, 2030 climate targets, and a governance system based on National Energy and Climate Plans, the power sector has been most affected by this transformation.

Consequently, while this report also examines changes in primary energy mixes, the main focus is on the power sector – specifically, how the energy generation mix is evolving across the EU countries analysed, and the key differences and similarities in this regard. The second area of analysis is economy-wide emissions, including their levels and intensity.

The primary energy supply across Central and Eastern Europe (CEE) is nearly equal to that of Germany, amounting to 97% of its total. In the region's largest country, Poland, supply is 2.5 times higher than in the second-largest, the Czech Republic, and accounts for approximately 40% of Germany's supply. The asymmetry is even more pronounced in electricity generation. In 2022, total power generation in the region was equal to 81% of Germany's output, with Poland alone contributing more than one-third of the region's total. These differences reflect the relative sizes of the economies and are gradually narrowing as economic growth increases electricity demand in the region while demand in Germany has started to decline.

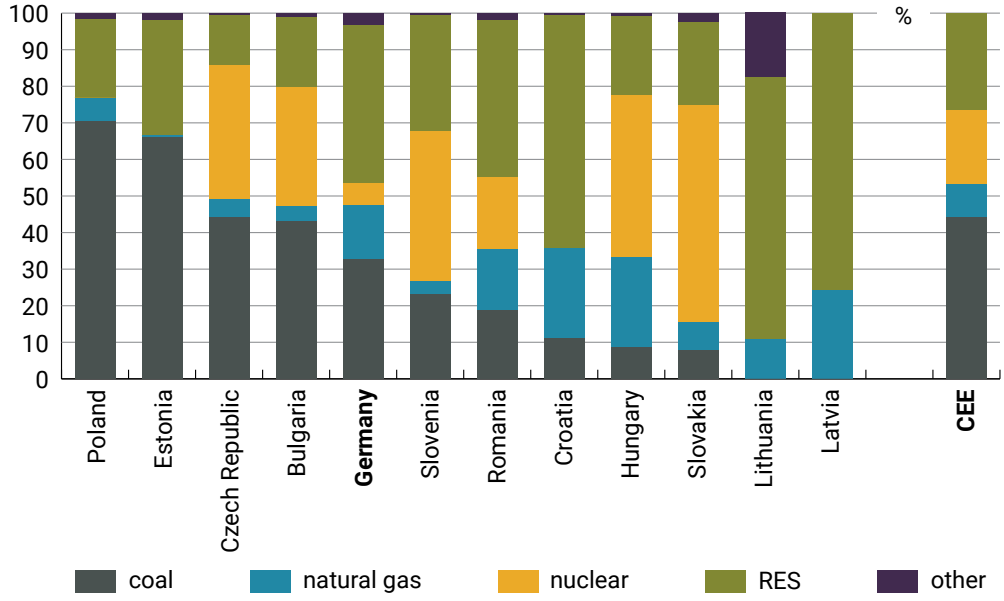
In many countries of the region, oil and petroleum products dominate the primary energy balance. This is largely due to the development of the transport sector and may change with reduced fuel consumption and the electrification of transport.

Chart 1. Primary energy supply structure in 2022



Source: IEA.

Chart 2. Electricity generation structure in 2022



Source: IEA.

Despite a clear decline in coal use, it remains a significant component of the primary energy mix and electricity generation in some countries. It continues

to play the crucial role in power generation in Poland, the Czech Republic, Bulgaria, Germany, and Estonia (where oil shale is used). In contrast, Hungary, Slovakia, Lithuania, and Latvia use little or no coal for electricity production.

Nuclear energy plays – or is set to play – a significant role in most CEE countries. Its production has increased in recent decades and is expected to continue growing, with Poland planning to build its first nuclear power plant. The situation differs in the Baltic states. Lithuania shut down the only nuclear power plant in the region at the end of 2009, and while the possibility of developing small modular reactors is being considered, no firm plans exist. Germany remains the exception, having phased out nuclear power in April 2023 with no plans to reinstate it.

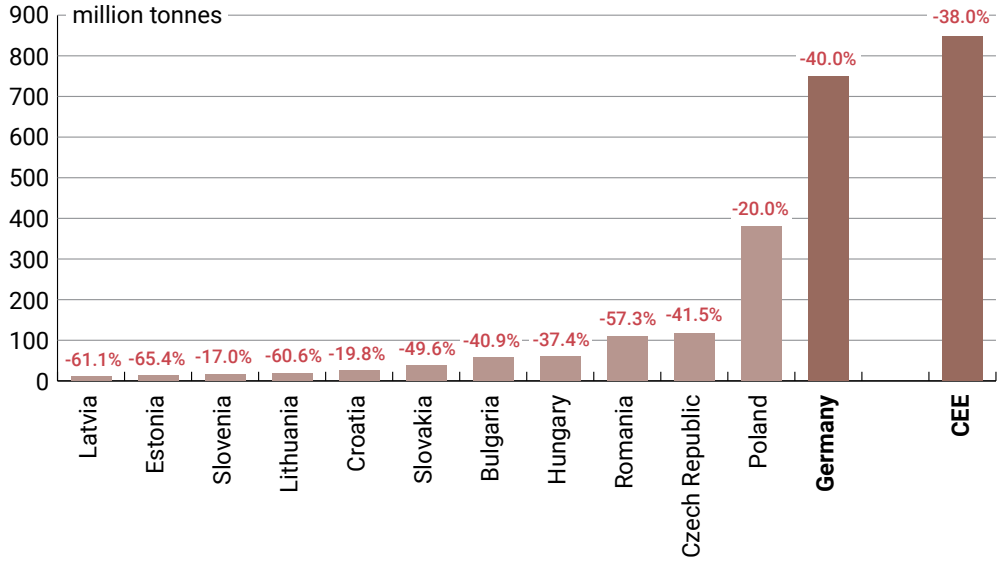
Natural gas is also a key energy source in most countries of the region, used both in electricity generation – as a transitional and back-up fuel – and in district heating and industry. Its role has diminished in recent years, primarily due to the sharp rise in prices following the gas crisis and the resulting drop (or even destruction) in demand. In some countries, including Romania, Hungary, and the Baltic states, declining gas use is also linked to ongoing energy transition efforts and deeper market integration.

Latvia and Lithuania have the highest share of renewable energy in electricity generation, exceeding 70% of domestic production, followed by Croatia with over 60%. However, all three countries also rely heavily on electricity imports to meet their overall consumption. Germany, with renewables accounting for over 40% of electricity generation, ranks fourth in this group. Until recently, it was not only self-sufficient but also an electricity exporter. However, the phase-out of nuclear and coal power is altering this balance.

The countries in the region rely on different renewable sources. Hydropower plays a significant role in Latvia (55% of generation), Croatia (around 40%), as well as in Slovenia, Lithuania, Romania, and Slovakia, while in other countries it is practically absent. Wind power is particularly important in Germany and Lithuania, whereas solar energy is a key contributor in Hungary, Germany and increasingly in Bulgaria. Some countries – such as Slovakia, the Czech Republic, Slovenia, and Latvia – use both wind and solar energy to a minimal extent. Finally, biofuels (biomass)[2] play a relatively large role in the Baltic states, particularly in Latvia and Estonia.

[2] The classification of biofuels as other renewable sources raises a number of concerns among experts.

Chart 3. Total GHG emissions in 2022 and change compared to 1990



Source: Eurostat.

There are significant differences in total greenhouse gas (GHG) emissions across the economies of the analysed countries (excluding LULUCF[3]). In 2022, total emissions from CEE were 13% higher than those of Germany. Poland accounted for the largest share in the region – nearly half of total emissions – though this was still half the level of Germany. Meanwhile, the smallest economies, which rely heavily on domestic renewable energy generation, such as Latvia and Estonia, contributed only about 1–2% each.

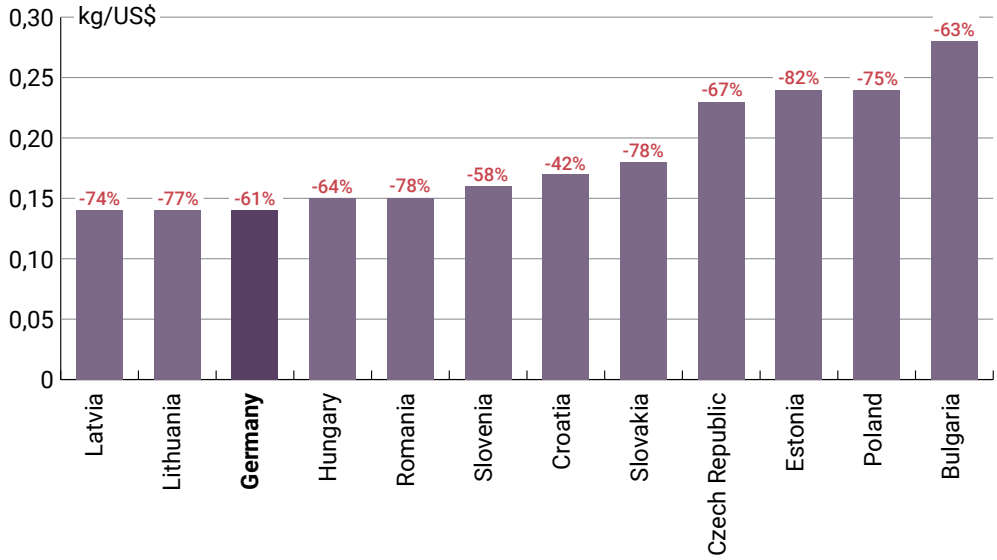
Central and Eastern Europe also recorded the largest reductions in GHG emissions across the EU compared to 1990, with the most significant declines in the Baltic states (particularly Estonia) and Romania. However, these reductions were primarily driven by systemic changes, including the collapse of the Soviet Union, the end of communism, and the resulting deindustrialisation. In the following years, the pace of emissions reductions in the region has slowed.

According to projections outlined in National Energy and Climate Plans, emissions reductions are expected to accelerate significantly in the coming years compared to 2022, with Germany anticipated to see the steepest decline. In CEE, the planned reductions are more moderate. Estonia, the Czech Republic, Bulgaria, and Latvia are expected to achieve the most substantial cuts. However,

[3] I.e. Land use, land-use change, and forestry.

some countries, such as Slovenia and Slovakia, are forecasted to see even an increase in emissions compared to 2022 levels.

Chart 4. GHG emission intensity per GDP (PPP) in 2022 and change compared to 1990



Source: Eurostat and World Bank.

Emission intensity is measured here as the ratio of total emissions to gross domestic product per capita (in constant 2021 US dollars).

There are significant differences in emission intensity among the analysed countries. The leading group – Germany, Lithuania, Latvia, Hungary, and Romania – has emission intensities up to twice as low as the worst-performing countries: Bulgaria, Poland, Estonia, and the Czech Republic.

Compared to 1990, emission intensity has declined sharply. The largest reductions – ranging from 75% to 80% – have been recorded in Estonia, Romania, Slovakia, Lithuania, and Poland. However, these declines were driven more by economic growth and rising GDP than by absolute emission reductions. This indicates a decoupling of economic growth from emissions intensity in the region.

2. Energy security in the region

The accelerating energy transition in the EU and globally, combined with ongoing crises – most notably the fourth year of Russia's full-scale war with Ukraine,

as well as instability in the Middle East, and potentially also with dynamic shifts in US foreign policy priorities during Trump's presidency – has created significant challenges for stability and security of Europe's energy supply. As a result, it is crucial to assess the scale and impact of the rapid changes that have taken place in recent years, as well as to identify the remaining vulnerabilities and weak points in energy systems across the EU, individual countries, and regions, including Central and Eastern Europe and Germany. Additionally, it is essential to recognise the most significant risks and to develop an effective strategy to mitigate them.

While issues with the stability of Russian energy supplies existed before – especially in Central and Eastern Europe – they intensified from mid-2021 and ultimately affected the entire EU. As a result, at least in the short term, not only has energy security gained greater importance in the EU, but so have the traditional challenges associated with it.

Since before the war, gas supplies from Russia to the EU have undergone drastic changes, primarily due to Russian actions. They have fallen by approximately 70% – from 150 bcm in 2021 to 43 bcm in 2023.[4] However, Russian gas exports to the EU have not been entirely eliminated, largely due to the absence of EU sanctions. Notably, some flows have persisted or even increased:

Russian LNG exports: The EU remains the world's largest market for Russian liquefied natural gas, with import volumes rising in 2024.[5] These supplies have primarily been directed to terminals in Spain, France, and Belgium, from where they were redistributed to other European buyers, including the German market.[6]

Gas deliveries via the TurkStream pipeline, which runs through the Black Sea and then via Turkey and the Balkans to Greece, Hungary, Serbia, and other Western Balkan countries, as well as – in smaller volumes – to a hub in Bulgaria (see Chapter III).

4 For detailed data on changes in Russian gas supplies to the EU, see A. Łoskot-Strachota *et al.*, *The unfinished de-russification...*, *op. cit.*

5 See 'EU imports record quantities of Russian LNG in 2024', Financial Times, 20 December 2024, ft.com.

6 According to media reports compiled by a group of Belgian, German, and Ukrainian NGOs, one of the largest recipients of Russian LNG is the German company Securing Energy for Europe (SEFE). In 2023, its imports of this resource accounted for between 3% and over 9% of all gas delivered to Germany. See 'German demand soars for Russian LNG via European ports', Financial Times, 28 January 2025, ft.com.

In 2024, gas deliveries via Ukraine and overall Russian gas exports to the EU increased compared to the previous year.[7] However, with the end of transit through Ukraine's pipelines (since 1 January 2025) and assuming absence of significant changes in the existing policy of the parties involved,[8] Russian gas supplies to the EU are expected to decline significantly in the following years. At the same time, efforts and pressure – mainly from Slovakia and Hungary – are being exerted on Kyiv to resume gas transit from Russia or an alternative source, such as Azerbaijan. While the outcome of these efforts remains uncertain, they highlight the challenges of ending a long-standing dependence on Russian energy, particularly for countries that have not sufficiently prepared for this change – and, by extension, for the EU as a whole.

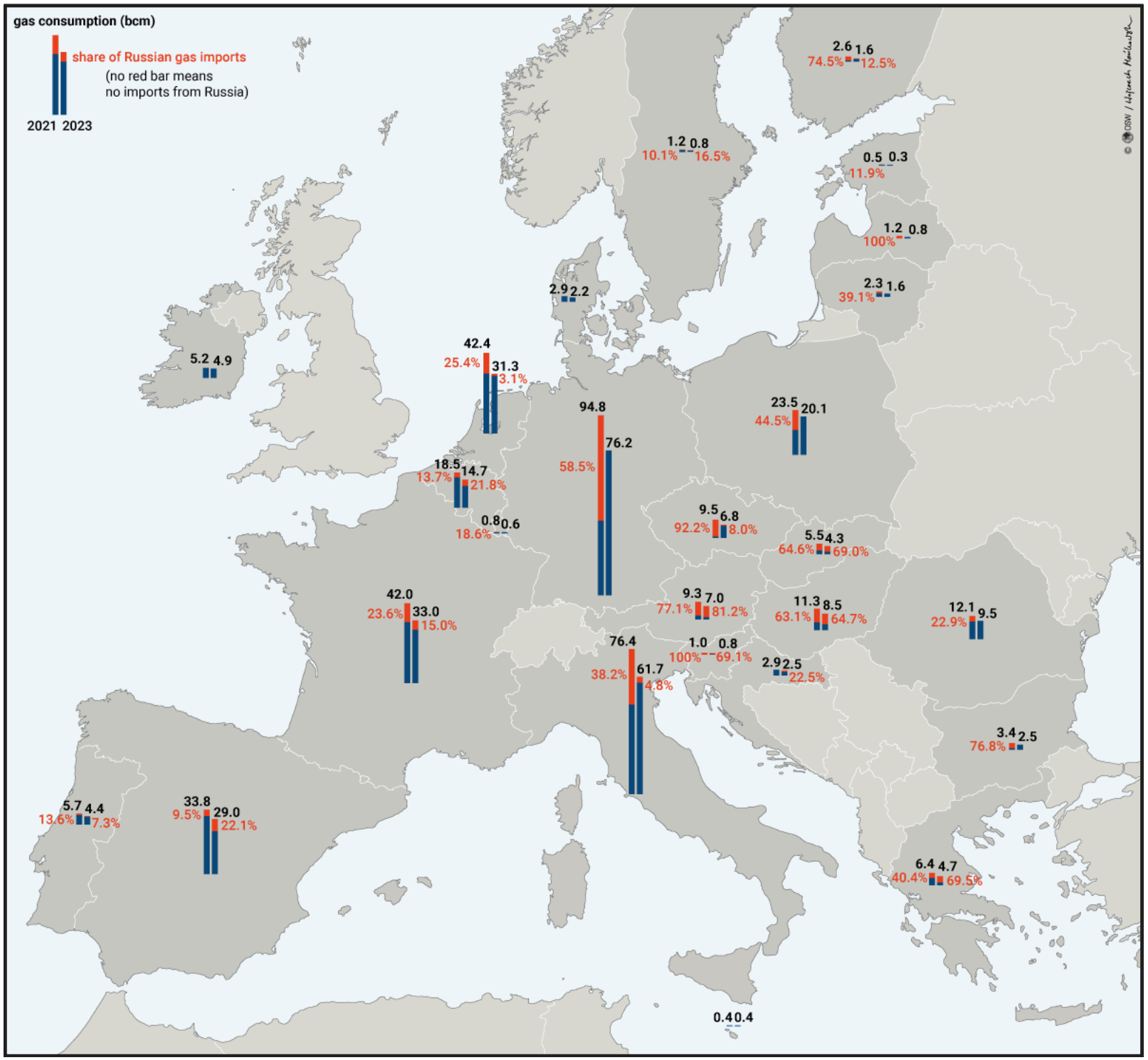
The remaining Russian gas supplies often provide a short-term competitive advantage for countries that continue to import them. However, they also leave these states vulnerable to Russian supply manipulation and weaponisation while slowing investment in diversification. As a result, further reductions in Russian gas exports – such as those following the end of Ukrainian transit – could lead to at least temporary price increases in the EU market.

Maintaining energy ties with Moscow also has broader political consequences across Europe. It complicates efforts to implement effective measures against Russia's interests, disrupts EU unity and cohesion, weakens support for Ukraine, and continues to provide financial resources for Russia's war effort.

7 According to estimates by the Bruegel think tank, imports decreased by approximately 10 bcm compared with 2023. See U. Keliauskaitė, B. McWilliams, G. Sgaravatti, G. Zachmann, *European natural gas imports*, Bruegel, 5 February 2025, bruegel.org.

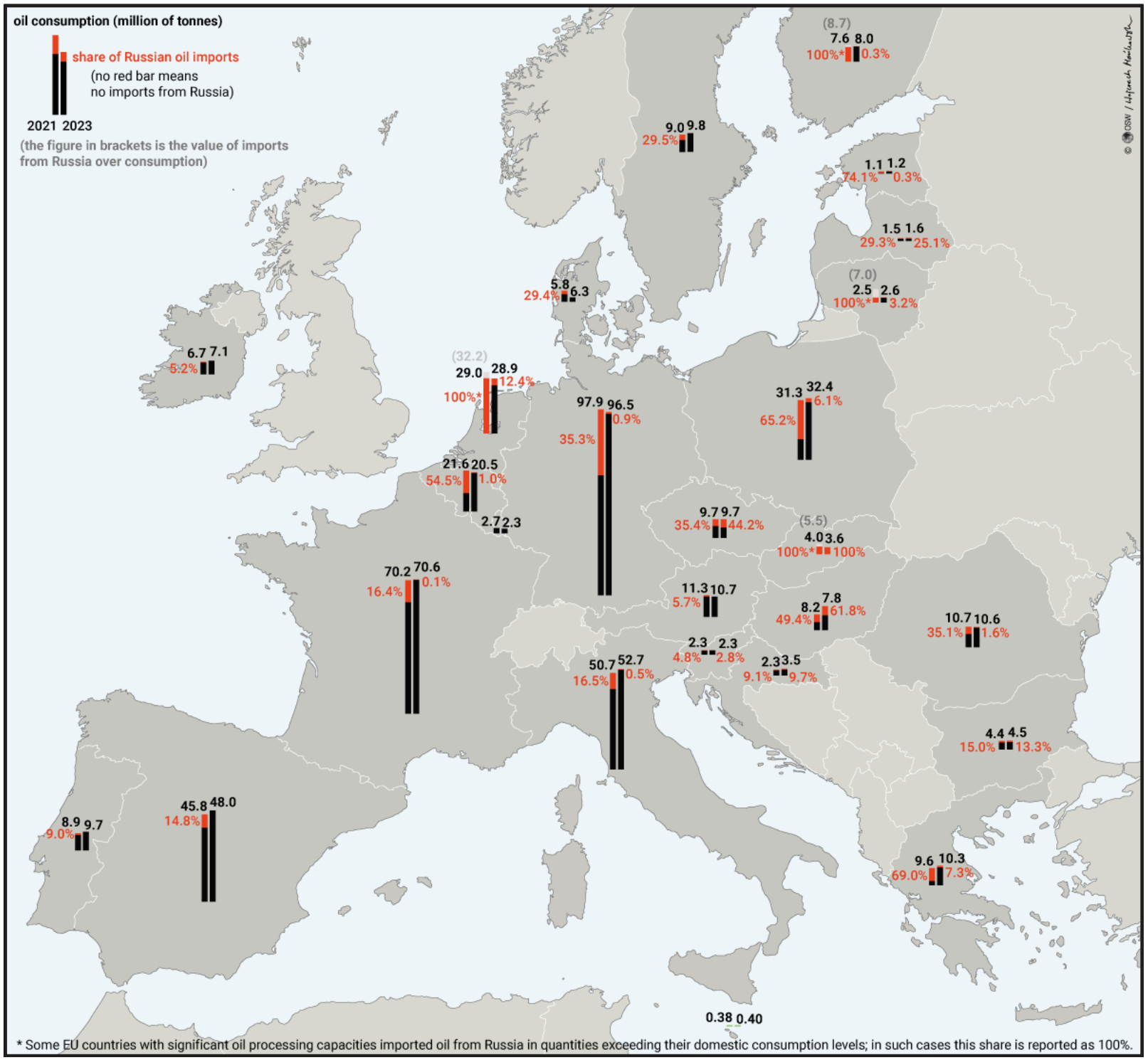
8 Besides questions about a potential resumption of transit through Ukraine, media speculation has also emerged regarding the possibility of using the undamaged strand of Nord Stream 2 to restart Russian supplies to Germany.

Map 1. The EU's dependency on Russian gas in 2021 and 2023 (imports from Russia as a share of total consumption)



Source: Eurostat, ACER, Rystad, enerdata, and information from the media.

Map 2. The EU's dependency of Russian oil and petroleum products in 2021 and 2023 (imports from RF as a share of total consumption)



Source: Eurostat.

The EU's dependence on Russian oil and petroleum products has declined even more sharply than in the case of natural gas. Imports fell by approximately 82% – from an average of 3.3 million barrels per day in 2021 to 0.6 million in 2023.[9] The primary driver of this reduction was the imposition of sanctions by the EU and other Western countries. The abrupt drop in Russian oil imports was made possible by replacing it with non-Russian crude sourced through existing alternative supply routes.[10]

However, due to ongoing (and repeatedly extended) exemptions and/or derogations, certain Central European countries continue to be supplied via the southern branch of the Druzhba pipeline – Slovakia, Hungary and, to a lesser extent, the Czech Republic[11] – and remain partially dependent on Russian oil. As with natural gas, Budapest and Bratislava are the strongest advocates for continuing Russian imports, linking their support for other strategically important EU measures to securing this energy supply.[12]

Other breaches of the sanctions regime are also visible. For example, restrictions do not apply to exports by Russian companies – along with many other oil firms – via the CPC[13] pipeline from Kazakhstan to the Novorossiysk terminal and onward through the Black Sea. Additionally, Germany remains indirectly dependent on Russia through its imports of Kazakh oil, which are transported via the Russian pipeline system with Russia's approval. Meanwhile, the media and NGO reports suggest that companies from EU countries are facilitating sanctions evasion by enabling Russian oil exports through the so-called "shadow fleet" operating from Baltic and Black Sea terminals. Some firms are even allegedly purchasing Russian crude on the black market despite the sanctions.[14]

9 For further details, see A. Łoskot-Strachota *et al.*, *The unfinished de-russification...*, *op. cit.*

10 In some cases, infrastructure has been expanded in recent years – for example, the Polish Naftoport and the Pomeranian Pipeline.

11 According to official statements, since the beginning of 2025, they have become independent of Russian supplies following the expansion of the TAL pipeline running from Trieste, Italy. See A. Zachová, 'Czechia celebrates full independence from Russian oil imports', Euractiv, 15 January 2025, euractiv.com.

12 In January 2025, Budapest agreed to extend EU sanctions on Russia on the condition that the security of Russian energy resources supplies to Hungary was ensured, while also demanding that Ukraine resume gas transit. See G. Gavin, N. Vinocur, K. Verhelst, V. Jack, 'Hungary backs down in EU Russia sanctions standoff', Politico, 27 January 2025, politico.eu.

13 Caspian Pipeline Consortium.

14 There were also reports of Russian oil being delivered this way to terminals in Bulgaria and Romania. See M. Tkach, 'Russia continues to ship oil directly to the EU despite sanctions, investigation finds', Euractiv, 17 December 2024, euractiv.com.

The risks associated with these lingering dependencies become particularly clear in light of repeated statements from Kyiv that it intends to implement a ban on the transit of Russian oil through Ukrainian territory.[15] Continued imports not only sustain individual companies' and EU states' reliance on Russian oil – and the vulnerabilities related to that – but also reduce the willingness, and therefore the likelihood, of further restrictions. Moreover, these remaining dependencies weaken the effectiveness of existing sanctions, undermining one of the EU and the West's key policy tools. In some cases, non-Russian suppliers have been involved in sanction-evasion schemes, increasing their ties to Russia and limiting their potential as genuine alternative suppliers for the EU.

Russian oil companies still hold stakes in energy assets across the EU. Lukoil owns or has significant shares in refineries in Bulgaria, Romania and the Netherlands, while Rosneft formally retains ownership of three German refineries.[16] Although, at least officially, none of these facilities process Russian crude anymore, this ownership structure may still influence the functioning of this strategically sensitive segment of the EU market.

Beyond the oil and gas sector, cooperation with Russia and Russian companies remains significant in the nuclear industry. Reactors built using Russian technology continue to operate in five EU countries – Bulgaria, the Czech Republic, Finland, Slovakia, and Hungary – as well as in Ukraine. While there are advanced efforts to introduce alternative fuel sources, in many cases this is only the beginning of a complex transition in a highly regulated sector. During the interim phase, Russian companies may still play a role in the system, for example, by licensing fuel production – such as the current cooperation between TVEL and French firms. Russia also remains a key player in both the European and global nuclear fuel cycle.[17]

The sharp reduction in imports from Russia has not led to significant changes in overall import dependence, particularly on non-EU suppliers. Russian gas was largely replaced by increased LNG imports, which come almost entirely from outside the EU – mainly the United States, Algeria, and Qatar.[18] A simi-

[15] The effects of dependency were laid bare in the summer of 2024, when Russian oil supplies via Ukraine to refineries in Central Europe were reduced.

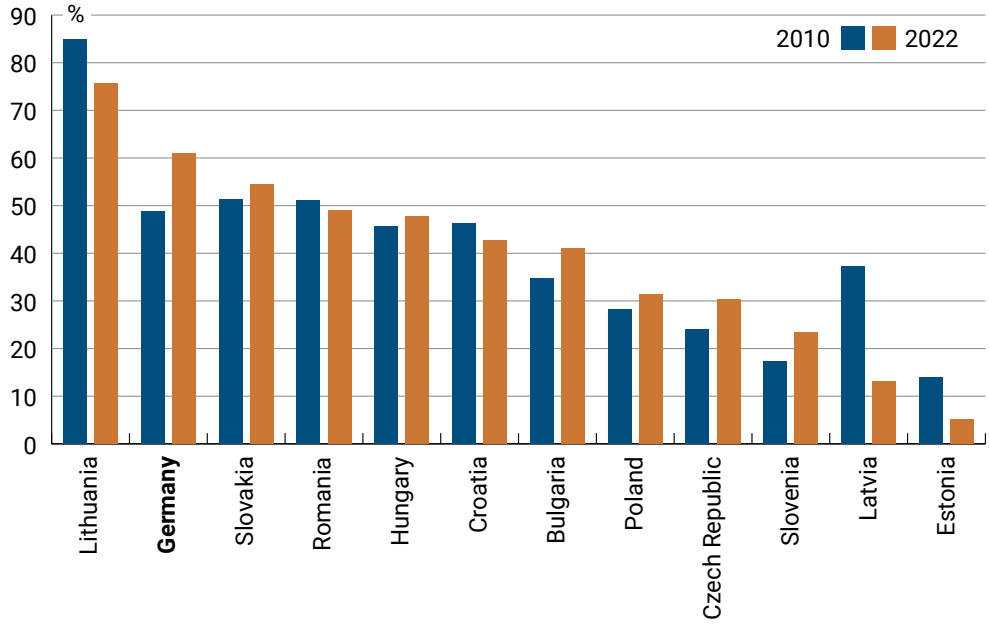
[16] Since 2022, these have been under the trusteeship of the Federal Network Agency (BNetzA).

[17] For further details, see A. Łoskot-Strachota *et al.*, *The unfinished de-russification…*, *op. cit.*; *Euratom Supply Agency. Annual Report 2023*, Luxembourg 2024, euratom-supply.ec.europa.eu.

[18] See A. Łoskot-Strachota, U. Keliauskaitė, G. Zachmann, 'Future European Union gas imports: balancing different objectives', Bruegel, 3 July 2024, bruegel.org.

lar trend is seen in oil imports, with the largest sources in 2023 being the US, Norway, Kazakhstan and the Middle Eastern countries.

Chart 5. Dependence on energy imports from third countries in 2010 and 2022



Source: Eurostat.

Differences in the dynamics of import dependence among EU countries stem from various factors, including specific diversification efforts and changes in demand. The Baltic states and Finland stopped importing electricity from Russia in 2022, replacing it with imports from neighbouring EU countries or domestic production, which reduced their overall dependence on third-country energy imports. In the case of natural gas, consumption fell in many EU countries between 2022 and 2023, but intra-EU gas production also declined over this period.

A continued and systematic shift away from Russian energy imports – particularly in the context of the US's new export-driven hydrocarbon policy – will likely lead to shifts in the structure of dependencies. However, in the short term, this will not necessarily significantly reduce the EU's overall reliance on non-EU imports. At the same time, questions about the criteria guiding the EU's gas policy, including its import portfolio, are becoming increasingly important.[19]

[19] *Ibid.*

The "de-russification" of EU energy imports, the shift to a new import mix, and the accelerating energy transition bring not only benefits but also new short-term challenges. The decline in Russian supplies has reduced the share of long-term contracts in the EU's energy portfolio while increasing reliance on spot and short-term transactions. This trend is further reinforced by the decarbonisation process and the provisions of the EU's fourth gas package, which focuses on hydrogen and gas market decarbonisation.[20] As a result, the EU is becoming more closely linked to the global markets, making it more exposed to their fluctuations, risks, and uncertainties – leading to greater price volatility.

The reduction in pipeline imports of oil and gas from Russia has significantly increased the EU's dependence on seaborne imports of oil, petroleum products, LNG and coal – transported by tankers, LNG carriers, and subsea pipelines. Combined with existing and planned offshore infrastructure – such as subsea power cables, wind farms and, in the longer term, import routes for low- and zero-emission gases or CO_2 transport – this shift has dramatically increased the role of maritime supply routes in ensuring Europe's energy stability. Consequently, securing these maritime corridors and infrastructure has become a strategic priority.

For the Central and Eastern European countries and Germany, the most critical maritime regions are the Baltic and Black Seas, but the North Sea and the Mediterranean also play an essential role.

Russia's ongoing war against Ukraine and its hybrid actions targeting the West have increased the risks to critical energy infrastructure, both at sea and on land. Beyond the regular destruction of Ukraine's energy assets, this is seen in incidents such as the explosions on the Nord Stream 1 and 2 pipelines and repeated damage to power and telecommunications cables on the Baltic Sea floor. As electrification advances and grid expansion continues within the EU, ensuring effective infrastructure protection – against both traditional threats and cyberattacks – has become increasingly important. This also raises the need to clarify responsibility for securing cross-border and internationally located infrastructure (such as when they run through international waters).

For the Central and Eastern European countries, this is particularly relevant given their key role in supplying gas, fuels and electricity to Ukraine and Moldova, as well as in integrating the energy markets of these countries – and the Baltic states – into the EU market.

[20] *Hydrogen and decarbonised gas market*, European Commission, energy.ec.europa.eu.

Long-term processes also shape the level and structure of import dependence, including the trend in the EU of reducing domestic fossil fuel production and use – this not only concerns oil and gas but also coal. This trend is particularly relevant for countries where coal remains a major part of the energy mix, such as Poland, the Czech Republic and Germany. This raises the question of how to reconcile the role of domestic energy resources production in economic sovereignty and energy security with the objectives of the energy transition and specific regulations that limit the profitability of extraction, such as the EU methane regulation.

The pathways and pace of decarbonisation in individual countries, along with the accelerating electrification that accompanies them, are equally important. During the transition period, this means operating two parallel energy systems, which in turn multiplies the challenges and dependencies – both traditional ones and those linked to the emerging decarbonised system.

In the longer term, the energy transition will reduce import dependency, at least on conventional energy resources. However, this shift will also increase the reliance on other types of relations with third countries – such as access to critical raw materials and clean technologies, which are already key today. These dependencies often emerge at different stages of the value chain, reshaping international economic relationships. At the same time, the transition will heighten the importance of ensuring the resilience and stability of the EU's internal energy system, particularly in areas such as grid stabilisation and managing a system increasingly reliant on variable renewable energy sources.

3. Energy prices and competitiveness

Recent years have brought major shifts in global markets, including the 2022–2023 energy crisis and an unprecedented restructuring of the EU's import links. These changes led to record price increases and heightened volatility across Europe, and – to a lesser extent – in other global markets. The natural gas market was the most affected,[21] but electricity prices also surged significantly.[22] Additionally, the cost of CO_2 emission allowances rose.[23]

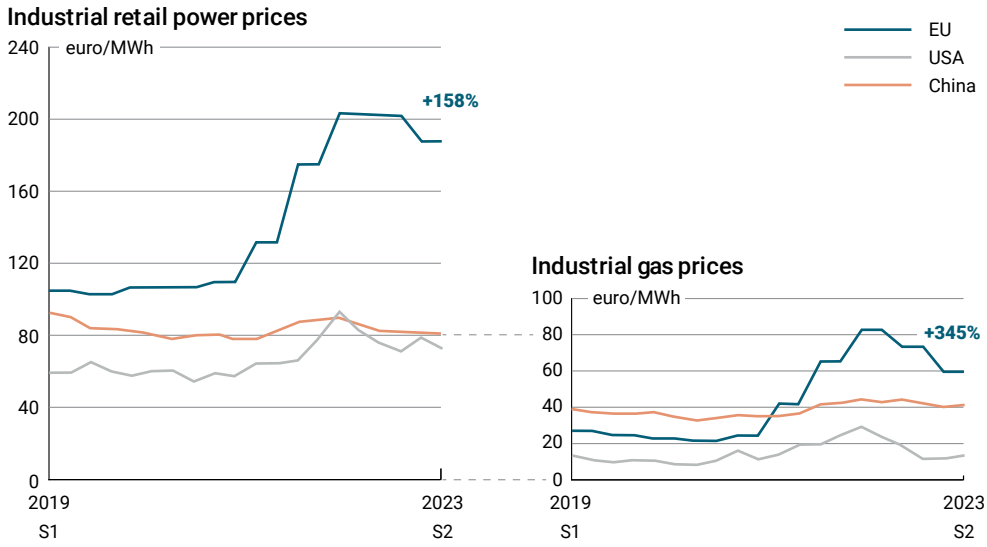
[21] In the months following the outbreak of the full-scale war in Ukraine, TTF market prices for gas were approximately six times higher than the 2010–2020 average. See *Study on energy prices and costs: evaluating impacts on households and industry – 2023 edition*, European Union, 2024, op.europa.eu.

[22] The average day-ahead electricity price in the EU in the first half of 2022 was four times higher than the 2010–2020 average. See *ibid*.

[23] The Fit for 55 package also contributed to this.

While all indications suggest that the crisis has passed and prices have dropped from their record highs at the turn of 2022 and 2023, they remain noticeably higher than before Russia's invasion of Ukraine in February 2022. Nevertheless, the market remains sensitive to fluctuations in resource and energy availability.

Chart 6. Gas prices and retail energy prices for industry in 2019–2023



Source: M. Draghi report, *The Future of European Competitiveness, Part B: In-depth Analysis and Recommendations*, European Commission, September 2024. Diagram based on data from Eurostat, EIA, and CEIC.

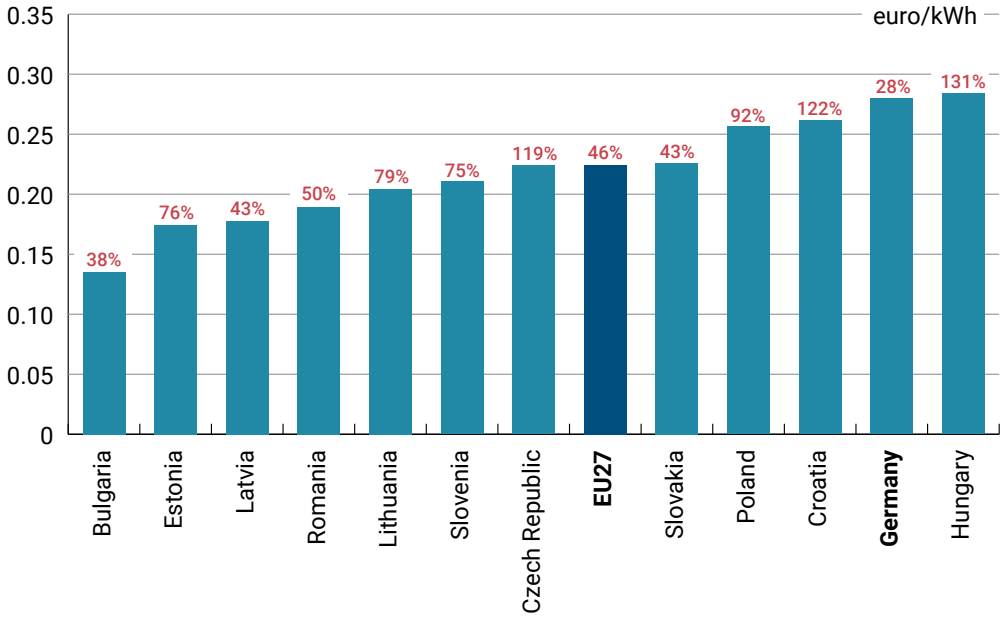
Unlike before Russia's full-scale invasion of Ukraine and the subsequent energy crisis, natural gas prices in the EU have remained not only above US prices but – throughout most of 2023 and often in 2024 – also higher than those in the Asian markets. According to data presented in Mario Draghi's report, industrial gas prices in the second half of 2023 were nearly four times higher than in the US and two-thirds higher than in China.

Electricity prices in Europe had already been higher than in other parts of the world for some time. However, geopolitical shifts and energy market disruptions led to further significant increases. As a result, in 2023, retail electricity prices for industry in Europe were more than twice as high as in both the US and China.

This has significantly reduced the competitiveness of doing business in the EU, particularly for energy-intensive industries. As a consequence, many companies have suspended, scaled back, or permanently shut down operations – often relocating to countries with lower energy costs, including the US. This issue

has been acutely felt in Germany and Central and Eastern Europe, affecting sectors such as steel and metallurgy, the automotive and chemical industries, including fertiliser production.

Chart 7. Electricity prices for medium-sized enterprises[24] in H1 2024 and change compared to 2020



Source: Eurostat.

In recent years, high energy prices have been observed across all the countries in the region, affecting both households and industry. Among medium-sized industrial consumers, final electricity prices[25] varied significantly between countries. The highest prices – recorded in Hungary, Germany, Croatia and Poland – were double those of the lowest (in Bulgaria[26]) and exceeded the EU average.

Price increases in recent years have also been notable, with industrial electricity prices rising more sharply than household prices. The smallest increases

[24] Consumption for consumers using between 500 MWh and 1,999 MWh (band IC). This is significant, as different consumer groups in various countries are subject to different tariffs and, in some cases, benefit from exemptions or compensation schemes. For example, in Germany, the largest industrial energy consumers pay significantly less (excluding VAT).

[25] Including taxes and additional charges.

[26] Where, until the end of last year, they benefited from state compensation, and the prospect of price increases from January 2025 triggered waves of protests.

for industry were seen in Germany, Bulgaria and Latvia. However, in most countries, price hikes were substantial – above the EU average – with the largest spikes occurring in Hungary, Croatia and the Czech Republic.

Household electricity prices are more difficult to compare. Residential consumers are typically a protected group, and both the methods and scale of price regulation and mitigation measures vary widely across countries. As a result, household electricity prices in the EU are highly uneven, and these differences have widened since the crisis. This has become an increasing challenge, particularly for Southeast European countries, which are calling for EU action to improve interconnections between their region and the rest of the bloc to address these disparities.

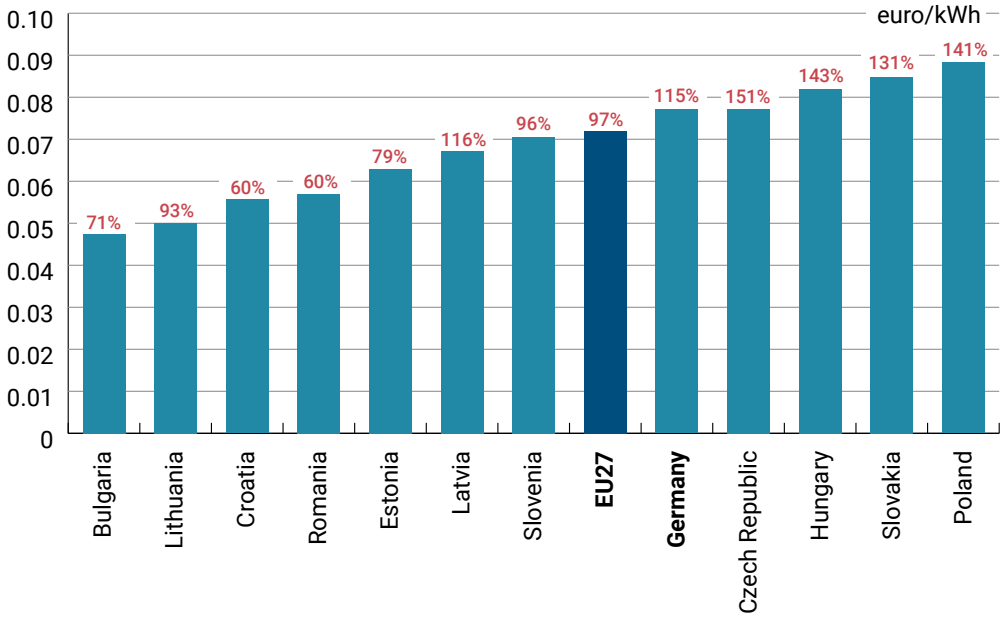
Electricity prices are particularly low in countries where the government has had a long-standing policy of keeping them at an artificially low level – such as in Hungary – though this comes at a significant fiscal cost. As a result, the region includes both some of the EU's highest electricity prices (e.g. Germany, the Czech Republic) and some of the lowest (e.g. Hungary, Bulgaria, Croatia, and Slovakia).

A key challenge for 2025 will be the gradual lifting of crisis-related emergency measures such as energy price caps and subsidies for households, which remain in place in most countries in the region.

Natural gas prices for businesses in the analysed countries often hovered around or above the EU average. The highest prices were recorded in the V4 countries (Poland, the Czech Republic, Slovakia and Hungary) and Germany, while the lowest – nearly half the price of those in Poland – were in Bulgaria and Lithuania. As with electricity, gas prices surged following the outbreak of war, with the steepest increases again occurring in the V4 countries.

Household gas prices also varied significantly across the member states. The highest, exceeding the EU average, were in Germany and the Czech Republic, while the lowest were once again in Hungary – where they were more than four times lower than in the most expensive countries in the region – followed by Croatia, Slovakia and Romania.

Chart 8. Natural gas prices for medium-sized enterprises[27] in H1 2024 and change compared to 2020



Source: Eurostat.

[27] For consumption between 10,000 GJ and 99,999 GJ (band I3).

III. ENERGY PRIORITIES AND CHALLENGES OF THE CENTRAL AND EASTERN EUROPEAN COUNTRIES AND GERMANY

1. Lithuania

Lithuania has successfully achieved energy independence from Russia and in recent years has been focusing on the development of renewable energy sources and integration with the EU. However, it faces challenges related to energy infrastructure security and price levels and stability.

Lithuania		energy transition	energy security	affordability
CURRENT STATE	Independence from Russian energy		✓	
	Electricity sector: ~50% import; ~70% of domestic generation from renewables	✓	✓	
	Significant price fluctuations and inflation during the 2022/2023 energy crisis			✓
CHALLENGES	Consequences of synchronising the electricity grid with the EU (continental) network		✓	
	High and unstable energy prices			✓
	Security of critical energy infrastructure (FSRU, cables)		✓	
GOALS	Increasing renewable energy production → self-sufficiency and green hydrogen	✓	✓	✓
	Expanding generation capacity and electricity connections with the EU		✓	✓
	Price reduction and stabilisation			✓

In recent years, Vilnius has focused its energy policy on enhancing energy security and reducing its dependence on Russian imports. This was achieved through the diversification of supply routes and sources for gas – such as the LNG terminal in Klaipėda – and electricity, with interconnections built to Sweden, Poland and other regional links. As a result, Lithuania completely halted imports of Russian energy and energy resources in 2022.

The final step in this process was Lithuania's decision, alongside Latvia and Estonia, not to extend the BRELL agreement with Russia and Belarus on the parallel operation of power systems.[28] In February 2025, the Baltic states desynchronised from the Russian-controlled IPS/UPS system and synchronised with the Continental European network.[29]

[28] 'Baltic TSOs have sent a notice on decoupling from Russia-controlled electricity system in February 2025', Elering, 16 July 2024, elering.ee

[29] 'ENTSO-E confirms successful synchronization of the Continental European electricity system with the systems of the Baltic countries', ENTSO-E, 9 February 2025, entsoe.eu.

To further strengthen energy security, Lithuania plans to engage in discussions with Latvia and Estonia on a joint investment in expanding regional power generation capacity. It fears that during peak demand periods, the Baltic power system could face instability.

Due to diversification efforts, Lithuania's dependence on gas and electricity imports via maritime routes has increased significantly. As a result, one of its key priorities is enhancing the security of critical energy infrastructure. Lastly, Vilnius aims to minimise the risks associated with a reliance on external suppliers of clean-tech, particularly from China.[30]

Alongside its diversification efforts, Lithuania has increased its renewable energy generation capacity. Currently, 70% of the country's electricity production comes from renewable sources, placing Lithuania among the leaders not only in the region but also within the EU in terms of renewables' share in consumption.[31]

Nevertheless, since the closure of the Ignalina nuclear power plant at the end of 2009, Lithuania has remained a net importer of electricity, with around 50% of its domestic demand met through external sources. However, since 2022, electricity imports have come exclusively from EU countries, thanks to interconnectors with neighbouring states and the launch of the Baltic electricity exchange.

This supply structure has, though, led to greater price volatility and rising costs – since 2020, electricity prices have doubled, while gas prices have increased several times over. The most significant spikes were observed during the energy crisis in 2022–23.

As a result, one of Lithuania's key current objectives is to reduce price volatility and overall energy costs while increasing self-sufficiency in energy production, particularly in light of expected demand growth. To achieve this, it plans to further expand interconnectors and attain energy self-sufficiency through the development of renewable energy sources. This would involve the construction of offshore wind farms, a further expansion of solar power, and potentially the deployment of small modular reactors (SMRs).

30 This mainly concerns inverters used in photovoltaic systems.

31 'Share of energy consumption from renewable sources in Europe', European Environment Agency, 16 January 2025, eea.europa.eu.

By 2030, Lithuania aims to generate 100% of its gross electricity consumption from renewables.[32] In the following years, it expects to produce surpluses for uses such as green hydrogen production.

2. Latvia

Latvia has the cleanest electricity mix in the region and has become independent of energy imports from Russia. Beyond lowering energy prices, Riga's key priorities include: modernising infrastructure, fostering strong regional cooperation, and deepening integration with the EU market.

Latvia		energy transition	energy security	affordability
CURRENT STATE	Electricity mix dominated by renewables, supplementary role of natural gas	✓	✓	✓
	Withdrawal from energy cooperation with Russia		✓	
	Economic slowdown			✓
CHALLENGES	Consequences of synchronising the electricity grid with the EU (continental) network		✓	
	Phasing out gas in electricity generation	✓		✓
	Security and expansion of energy connections with neighbouring countries		✓	
GOALS	Increasing renewable energy generation capacity	✓	✓	
	Reducing price volatility and energy cost spikes			✓
	Enhancing energy efficiency and electrifying transport	✓		

Latvia has the lowest-emission electricity mix among the countries discussed and one of the cleanest in the EU.[33] More than 75% of its electricity is generated from renewable sources, including 55% from hydropower. The remaining share comes from gas-fired power plants, which play a crucial role in balancing the system.[34] Phasing out natural gas in electricity generation is a challenge for the coming years, and Riga is yet to develop a clear strategy for replacing it.[35]

In the primary energy mix, biofuels – primarily biomass and waste – play the most significant role and are also the country's main domestically produced energy carriers.

[32] *Final update of the Integrated National Energy and Climate Plan of the Republic of Lithuania for the period 2021–2030*, commission.europa.eu.

[33] 'Greenhouse gas emission intensity of electricity generation in Europe', European Environment Agency, 31 October 2024, eea.europa.eu.

[34] See *Latvia 2024. Energy Policy Review*, International Energy Agency, May 2024, iea.org.

[35] 'Revidenti: Latvija riskē nesasniegt enerģētikas un klimata mērķus un saņemt sankcijas', Latvijas Sabiedriskais medijs, 16 January 2025, lsm.lv.

Like the other Baltic states, Latvia significantly reduced its economy's emissions after 1990. Today, most emissions come from sectors outside the EU Emissions Trading System (ETS), and their planned inclusion in the new ETS 2 presents a challenge. While Latvia's district heating relies largely on clean sources, decarbonising individual heating and transport sector will be more difficult.[36]

Energy security has been the most pressing issue in recent years, particularly amid increasing tensions with Russia, which was until recently Latvia's largest supplier. The country has completely eliminated imports of Russian gas, oil and electricity, and more recently also liquefied petroleum gas (LPG), following the implementation of EU sanctions. In February 2025, Latvia severed its last major energy link with Russia by desynchronising from the Russian-Belarusian electricity system and synchronising with the Continental European grid. However, the country remains dependent on energy resources imports and, to a much lesser extent (around 12% of consumption in 2023[37]), on electricity from other EU countries, primarily from and via its Baltic neighbours.[38]

Ensuring energy security requires the protection of energy infrastructure and maintaining strong regional and EU-wide cooperation. The Inčukalns gas storage facility in Latvia is a key asset for all three Baltic states. Additionally, in 2024, Riga joined the International Energy Agency (IEA) to enhance its resilience and security, including in the oil sector.[39]

The economic consequences of Russia's war against Ukraine have been severe for Latvia. The inflation crisis, driven by high energy prices, has caused an economic slowdown that has persisted for three years.[40]

36 See *Latvia 2024. Energy Policy Review*, *op. cit.*

37 'Latvia slashed its electricity imports in 2023', Latvian Public Media, 20 August 2024, eng.lsm.lv.

38 For example, in the case of LNG from the Lithuanian LNG terminal, Finnish terminals, or gas transported via the Balticconnector pipeline.

39 'Interview: Latvia prioritizing energy security with IEA membership – energy minister', S&P Global, 19 February 2024, spglobal.com.

40 M. Hansen, 'Are Latvia's food price rises more severe than elsewhere?', Latvian Public Media, 7 January 2025, eng.lsm.lv.

3. Estonia

Estonia has fully eliminated its dependence on Russian energy and has recorded the largest reduction in total emissions in the EU since 1990. However, the planned phase-out of oil shale remains a challenge for both energy security and price stability in the country.

Estonia		energy transition	energy security	affordability
CURRENT STATE	Independence from Russian energy		✓	
	Largest emissions reduction in the EU since 1990	✓		
	Declining but still significant share of oil shale in the energy mix	✓	✓	✓
CHALLENGES	Consequences of synchronising the electricity grid with the EU (continental) network		✓	
	Security of critical energy infrastructure (Balticconnector, cables)		✓	
	Decarbonisation – phasing out oil shale	✓	✓	✓
GOALS	New energy generation sources (renewables, possibly SMRs) and electricity connections with the EU	✓	✓	
	Lower prices, competitiveness, job creation			✓
	Support for phasing out oil shale, ensuring a just transition	✓	✓	✓

In recent years, Estonia has focused heavily on strengthening its energy security. It has completely eliminated its dependence on Russian energy and energy resources imports by developing interconnections with neighbouring countries.[41] The final step in this process, as in the other Baltic states, was the desynchronisation from the Russian-controlled electricity system and synchronisation with the Continental European grid in February 2025.

Ensuring energy security remains a priority, including protecting critical energy infrastructure against increasing hybrid threats – such as damage to undersea cables – and securing stable and affordable energy supplies during the decarbonisation process.

Since 1990, Estonia has recorded the largest reduction in greenhouse gas emissions among all the EU member states. However, as in several other countries in the region, this decline was primarily driven by deindustrialisation following the systemic transition which occurred when the USSR collapsed. In recent years, the energy transition has accelerated significantly. The share

[41] This refers to Estlink 1 and 2 with Finland, as well as interconnectors with the other Baltic states, enabling the use of the Lithuanian LNG terminal or the Latvian gas storage facility.

of oil shale – Estonia's key energy resource – in electricity generation fell from around 90% a decade ago to just over 50% in 2023.[42] Meanwhile, renewable sources, particularly biomass (wood and waste) and wind power, have played an increasingly important role.

Tallinn aims to achieve climate neutrality by 2050. Under its current plans, all electricity consumed in Estonia should come from renewable sources by 2030, with oil shale-fired generation ceasing entirely by 2035.[43] However, this transition presents major challenges. These include the risk of a temporary generation gap and concerns over supply stability and energy prices as oil shale-fired power plants are phased out. Further renewable energy development is planned, and there is an ongoing debate about building small modular reactors (SMRs).

There are also concerns about the negative impact on energy security. Estonia has so far been one of the least import-dependent countries in the region, thanks to its reliance on oil shale and biomass. There are also fears about the competitiveness of the national economy and potential social issues arising from the transition.[44] Furthermore, there is no clear strategy for managing the phase-out of oil shale and its consequences. Critics argue that the decision to abandon oil shale was primarily political, made without a thorough impact assessment or public consultation.[45]

[42] 'Oil shale electricity production decreased last year', Statistics Estonia, 6 September 2024, stat.ee.

[43] By 2040, oil shale extraction is planned for phasing out. See 'Estonian government secretly commits to ending oil shale use by 2040', Eesti Rahvusringhääling, 11 November 2024, news.err.ee.

[44] Due to the decarbonisation process, the Ida-Viru county (Ida Virumaa), where the oil shale sector provides approximately 3,000 jobs, faces structural changes that have not yet been planned by the central authorities. As a result, the local community will likely experience a rise in poverty levels.

[45] 'Estonian government secretly commits to ending oil shale use by 2040', *op. cit.*

4. Czech Republic

The Czech Republic has significantly reduced its energy dependence on Russia, strengthened the state's role in the sector, and is expanding nuclear energy. Its key challenges include completing the phase-out of coal, the costs of diversification, and high energy prices.

Czech Republic		energy transition	energy security	affordability
CURRENT STATE	Significant reduction in dependence on Russian energy resources		✓	
	Increasing state involvement in the energy sector		✓	
	Highest household energy prices in CEE, high prices for industry			✓
CHALLENGES	Costly and complex diversification (including via Germany)		✓	✓
	Phasing out coal	✓	✓	✓
	Energy and transition costs for industry (especially the automotive sector)	✓	✓	✓
GOALS	Expansion of nuclear and gas-fired generation, recognition of their role in EU energy transition and regulations		✓	✓
	Just transition (phasing out coal)	✓	✓	✓
	Lowering prices for households (and industry)			✓

Since 2022, energy security has become significantly more important in the Czech Republic. Following Russia's full-scale invasion of Ukraine, increased defence spending[46] was accompanied by steps to reduce reliance on Russian energy supplies, including raw materials and nuclear fuel, while also expanding state ownership in the sector. However, longer supply routes have generally resulted in higher prices. The need to import resources from more distant sources – including LNG instead of pipeline gas – combined with an energy mix still reliant on coal, and the government's reluctance to provide strong budgetary support for consumers have all made the Czech Republic one of the EU countries with the highest energy prices.

In the first half of 2024, Czech households faced the highest electricity prices in purchasing power standards in the EU – almost twice as high as in neighbouring Slovakia[47] – and the fourth-highest gas prices, behind Sweden, Portugal and the Netherlands.[48] Energy prices for businesses were also high. As a result, 2022–2023 saw a significant decline in living standards and worsening public

[46] In 2024, for the first time in 20 years, 2% of GDP was allocated for this purpose.
[47] *Electricity price statistics*, Eurostat, ec.europa.eu/eurostat.
[48] Also after adjusting for purchasing power parity. *Natural gas price statistics*, Eurostat, ec.europa.eu/eurostat.

sentiment. In 2024, the Liberty steelworks in Ostrava was declared insolvent,[49] while other similar plants have been scaling back operations due to unbalanced competition from non-EU steel producers, who are not subject to the Emissions Trading System (ETS), as well as the delayed and poorly implemented introduction of the EU's Carbon Border Adjustment Mechanism (CBAM). Meanwhile, the chemical company Spolana[50] announced at the start of the 2025 that it would lay off 500 of its 650 employees, citing one of the causes as reduced competitiveness due to higher production costs compared to non-EU markets.

As a result, competitiveness and price reduction have become increasingly important topics in the debate on Czech energy policy. The latter issue, in particular, is being strongly pushed by the current political opposition, which is likely to take power in the autumn 2025 elections. This raises expectations of more generous compensation mechanisms and the future government in Prague taking a more assertive approach towards Brussels.

The closure or downsizing of energy-intensive industries is accelerating decarbonisation and reducing emissions in the country. However, this comes at the cost of weakening Czech industry – especially heavy industry – and an increasing reliance on imports of industrial products from third countries. Prague is caught between the pressure of binding climate policy targets, which it is implementing at a relatively modest pace, and the demands of domestic industry. Additionally, the current centre-right government has failed to adopt a new energy strategy.[51] Climate-related issues linked to the energy transition have few strong advocates in the Czech public debate. Instead, media attention tends to focus on individual topics such as droughts, floods, and the cross-border impact of the Turów lignite mine, where these concerns become more prominent.

[49] This was the largest metallurgical complex in the Czech Republic, in operation since 1952. At the time of its bankruptcy announcement, it employed approximately 5,000 people.

[50] One of the largest Czech chemical companies, owned by Orlen Group, and the country's only producer of synthetic PVC polymers and caprolactam – an organic chemical compound used, among other things, in nylon production. Both productions are set to be discontinued. The company will maintain its sulphuric acid production and aims to develop more economically viable activities, such as plastic waste recycling.

[51] This has not occurred despite efforts and the government's commitment to updating the strategy by the end of 2023. The delay is due to the differences in approach of the four coalition parties and criticism of the initial proposals from some experts and the opposition, who referred to them as the "Czech Green Deal". This may have been a political liability ahead of the Chamber of Deputies elections in autumn 2025.

An important challenge for the Czech Republic will be synchronising the phase-out of coal-fired power plants with the commissioning of new nuclear and renewable energy capacity. This could pose risks to the stability and security of the electricity supply, particularly the threat of a temporary generation gap, which may indirectly drive up prices. The construction of new nuclear reactors is already years behind schedule and continues to face new complications. In the case of renewables, the Czech Republic faces structural disadvantages for larger-scale power generation, such as its landlocked geography and the relatively limited number of sunny days. While the country has long been a net exporter of electricity, its 2023 balance was the lowest in the 21st century and is likely to decline further as coal power plants are gradually shut down and delays persist in nuclear energy development.

5. Slovakia

Slovakia has one of the cleanest electricity mixes in the CEE and the EU, thanks to nuclear power, whose role it aims to expand. It still relies on energy resources imports from Russia, so the end of transit through Ukraine and the costs of diversification pose a challenge.

Slovakia		energy transition	energy security	affordability
CURRENT STATE	Clean electricity mix: significant role of nuclear energy, small amount of renewables	✓		
	Still dependent on Russian imports (gas, oil, nuclear fuel)		✓	✓
	Dependence on neighbouring countries (Ukraine, Hungary)		✓	✓
CHALLENGES	End of Russian gas transit through Ukraine; uncertain future of Russian oil supplies		✓	
	Energy prices and industrial transition (automotive sector)			✓
	Security of critical energy infrastructure and diversification		✓	
GOALS	Alternative sources and routes of energy resource supplies		✓	
	Expansion of nuclear and gas energy, recognition of their role in EU energy transition and regulations	✓	✓	✓
	Maintaining low household prices (and reducing industrial prices)		✓	✓

Bratislava clearly prioritises energy prices within the energy trilemma, highlighting the sharp increase in gas and oil costs from non-Russian sources and taking steps to extend imports from Russia. For the government, price levels – especially for households – are a key political and social priority. In autumn 2023, the left returned to power, having promised, among other things, "cheaper energy". At the same time, successive sanctions and the growing risks associated with maintaining cooperation with Russia are forcing the Slovak government to engage in issues related to energy security.

Like Hungary, Slovakia stands out for its willingness to continue energy cooperation with Russia for both economic and political reasons. In the case of oil, where it is highly dependent on Hungarian capital,[52] it coordinates its actions with Budapest. However, Slovak energy companies and the government are also seeking alternatives to ensure supply security, including through – as competitively priced as possible – imports via the Croatian terminal and the Adria pipeline. The main challenge for gas is the end of transit through Ukraine. While Slovakia is working to resume these flows,[53] it has also secured essential supplies through short-term contracts with the Western partners.[54] Regarding nuclear fuel, Slovakia is exploring the possibility of replacing Russian supplies with alternatives produced by the US company Westinghouse.[55]

Slovakia has long prioritised the development of nuclear energy, which now accounts for over 60% of its electricity generation – a share that is set to grow. After connecting the third unit of the Mochovce nuclear power plant to the grid, Slovakia became a net electricity exporter in 2023. This position is expected to strengthen further with the opening of another unit in 2026.[56] Due to nuclear power, Slovakia has one of the least carbon-intensive electricity sectors in the region and the entire EU.[57] As a result, Bratislava's key interest is ensuring that nuclear energy is recognised in the EU as a "clean" source and receives greater financial support from the EU budget. This naturally aligns it with France[58] while putting it at odds with Germany and Austria.

The left-wing nationalist government of Robert Fico has not taken a clear stance on EU climate policy. On the one hand, it highlights Slovakia's strong position in the region, given its low-emission energy mix. On the other, it criticises measures such as ETS 2 and views parts of EU climate legislation as a source of problems for ordinary Slovaks and businesses. For example, high electricity prices led to the suspension of core operations at Slovakia's largest aluminium producer, Slovalco, in 2022. This company accounted for 8–10% of the country's total electricity consumption.

52 The Hungarian company MOL controls the Bratislava refinery and the main fuel station network.
53 See K. Dębiec, 'Slovakia's actions in preparation for the expiry of the Ukrainian-Russian transit agreement', OSW, 20 December 2024, osw.waw.pl.
54 *Ibid.*
55 See. A. Łoskot-Strachota, K. Dębiec, A. Sadecki, *Nuclear energy in V4 – the current situation and perspectives*, V4 Energy Think Tank Platform, November 2024, osw.waw.pl.
56 *Ibid.*
57 'Greenhouse gas emission intensity of electricity generation in Europe', *op. cit.*
58 Slovakia and France have the highest share of nuclear energy in national electricity generation globally.

6. Hungary

Hungary's priority is low energy prices and stable supplies, which should ultimately be ensured primarily by nuclear power, also enabling further decarbonisation. Budapest has deepened its energy dependence on Russia, viewing cooperation as a means of securing cheap supplies. However, this reliance is also the main risk to Hungary's energy security.

Hungary

		energy transition	energy security	affordability
CURRENT STATE	High dependence on energy from Russia (imported resources, nuclear power plants)		✓	✓
	Significant role of gas and vulnerability to effects of crisis		✓	✓
	Relatively low-emission electricity sector (nuclear and solar energy)	✓		
CHALLENGES	Rising energy and gas prices (social and economic issue)			✓
	Energy and political costs of cooperation with Russia (future of Paks II nuclear plant, fewer EU funds, etc.)		✓	
	Costs of diversification and further decarbonisation	✓	✓	
	Energy policy shaped by arbitrary decisions of the ruling elite	✓	✓	✓
GOALS	Keeping energy prices low, attracting investment			✓
	Reducing dependence on imports and limiting role of gas in the energy mix	✓	✓	✓
	Recognition of nuclear and gas energy in the EU energy transition and regulations	✓	✓	✓

Due to its large share of nuclear power, the growing role of solar energy, and the continued significant use of gas, Hungary has a relatively low-emission energy mix and ambitious targets for further emission reductions. Achieving these goals was to be supported by extending the operation of the country's four existing nuclear reactors, expanding its nuclear power plant (with two additional units planned in cooperation with Rosatom[59]), and developing renewable energy sources, particularly solar power.

The country's biggest challenge is the rising cost of energy and gas, which has been increasing for several years. This affects not only the general public but also industry, including energy-intensive sectors vital to the economy.[60] Higher energy costs impact Hungary's economic competitiveness, its ability to attract and retain foreign investment, and, ultimately, the foundations of Viktor Orbán's social policies and his political support.

[59] A. Sadecki, 'Węgry: zielone światło dla Rosatomu w Paks', OSW, 31 August 2022, osw.waw.pl.
[60] Including the automotive and battery industries (lithium-ion batteries for electric vehicles).

Another challenge is uncertainty over the sustainability of the two pillars of Budapest's energy policy, which were originally intended to ensure in both the short- and long-term affordable energy prices, sufficient supply and economic competitiveness. So far, Hungary has pursued and even strengthened its energy cooperation with Russia, often in opposition to the rest of the EU. It has also committed to expanding its nuclear capacity in partnership with Russian Rosatom through the Paks II power plant project.[61] However, the ongoing war and associated risks – including sanctions and threats to physical infrastructure, such as in the Black Sea and Ukraine – cast doubt on the viability of such extensive cooperation with Russia. The timeline and ultimate completion of Paks II also remain uncertain.

A possible reduction of energy cooperation with Russia and/or delaying or suspending the construction of the nuclear power plant would drive up import costs, necessitate a diversification of energy sources, and require new infrastructure investments. This could lead to the postponement of coal plant closures, such as was already the case of Mátra power station,[62] or the commissioning of alternative units, including the planned gas-fired blocks.[63] Complicating matters further, Hungary's short- to medium-term potential for increasing renewable energy deployment is limited due to weather conditions and an underdeveloped grid. Moreover, with access to certain EU funds frozen, the country has reduced financial support from the Recovery and Resilience Facility (RRF) for decarbonisation and reducing its dependence on Russia.

These factors could place significant strain on the state budget and lead to further increases in energy costs. They may also raise emissions in Hungary's electricity sector, which would not only affect the population but also impact key industries, such as planned Chinese investments in battery manufacturing. At the same time, Hungary appears to lack a clear strategy for developing less energy-intensive industries or alternative sources of economic competitiveness. Challenges related to nuclear power and/or cooperation with Russia will also mean that ties with neighbouring countries will need to be

61 See S. Kardaś, A. Sadecki, 'Russian-Hungarian nuclear agreement', OSW, 15 January 2014, osw.waw.pl.

62 The only operational coal-fired power plant in Hungary, with a capacity of 950 MW, was originally set to be decommissioned in 2025, according to government declarations from 2021. However, following the outbreak of the war in Ukraine and the ensuing energy crisis, the government abandoned these plans. See 'Use of Coal-Fired Power Plants Increases amid Transition to Green Energy', Hungary Today, 30 January 2024, hungarytoday.hu.

63 Three new gas-fired units with a combined potential capacity of 1,650 MW. See Á. Bráder, 'Bidding Phase of Two New Hungarian Power Plants to Begin Soon', Hungarian Conservative, 4 August 2023, hungarianconservative.com.

strengthened – a step that is far from certain to be taken. However, a shift in Hungary's policy towards Russia could help unblock at least some channels for regional and intra-EU cooperation.

7. Poland

Poland has become independent of Russian energy resources. However, it remains highly reliant on fossil fuels, particularly coal. The key challenges include managing a just transition that maintains industrial competitiveness and affordable prices for society, as well as ensuring the security of energy infrastructure, especially in the Baltic Sea.

Poland		energy transition	energy security	affordability
CURRENT STATE	Complete end of energy resources and fuel imports from Russia		✓	
	High dependence on coal, relatively slow renewable energy development (vs needs)	✓		
	Rising energy prices			✓
	Outdated energy infrastructure	✓	✓	✓
CHALLENGES	Risk of a generation gap (coal phase-out, uncertainty regarding gas)	✓	✓	
	Physical security, cybersecurity, and adequate energy infrastructure expansion		✓	
	Just transition for coal regions	✓		✓
	Transition costs			✓
GOALS	Ensuring economic competitiveness (industry)			✓
	Developing nuclear energy and strengthening energy sovereignty	✓	✓	
	Decarbonisation and greater energy efficiency (industry, construction, transport)	✓		✓
	Increasing influence on EU energy and climate policy	✓	✓	✓

In recent years, Poland has significantly strengthened its energy security through a policy of diversifying supply routes and sources. The developed infrastructure[64] and signed contracts have enabled the complete and sustainable replacement of Russian oil and natural gas imports with resources from alternative suppliers.

Currently, the key challenges are building sufficient power generation capacity and electricity transmission infrastructure to meet the growing domestic demand for clean energy, as well as ensuring the security – both physical and cyber – of critical energy infrastructure and trade routes. In this context, the security of the Baltic Sea is particularly important, as its role in country's

[64] Including the LNG terminal, Baltic Pipe, and interconnectors.

energy supply has increased dramatically.[65] Another notable development is Poland's growing role in ensuring energy supply security and the functioning of neighbouring countries' energy systems – particularly that of Ukraine and, from February 2025, of the Baltic states.

Coal still dominates Poland's primary energy and electricity mix. In 2022, coal-fired power plants accounted for as much as 70% of domestic electricity generation.[66] However, this share has been declining rapidly in recent years and estimates for 2024 suggest it has already fallen to 57%.[67] Despite this fall, coal power continues to play a crucial role in balancing the grid and ensuring system stability – a role expected to end by late 2028.[68] Consequently, further expansion of gas-fired capacity is necessary, with gas already accounting for over 11% of power generation in 2024.[69]

Renewable electricity is also gradually increasing its share, reaching nearly 30% in 2024.[70] However, the growth of onshore wind power is being held back by regulatory barriers, while offshore wind farms face emerging security challenges. The expansion of renewables is also constrained by insufficient investment in energy storage and transmission networks.

Poland is planning to build its first full-scale nuclear power plant to provide stable supplies and support decarbonisation, complementing renewable generation. In the longer term, the country is also considering constructing a second plant and investing in small modular reactors (SMRs). However, nuclear power will not become a reality until the mid-2030s, with the first plant scheduled to be operational in 2036–2037.[71] As a result, uncertainty over the future of coal and gas units, combined with the pace of renewable energy development, raises the risk of a generation gap in the early 2030s.

65 Currently, most of Poland's imported crude oil and petroleum products, natural gas (via Baltic Pipe and as LNG), and coal arrive by sea. Offshore infrastructure for electricity generation and transmission is also being expanded. Poland's first nuclear power plant will be located on the coast. Additionally, a major hydrogen corridor from Scandinavian countries is planned to run through the Baltic Sea.

66 According to the IEA.

67 *2024 wrapped, czyli błyskawiczny przegląd najciekawszych danych z elektroenergetyki*, Forum Energii, forum-energii.eu.

68 In line with EU commitments.

69 *2024 wrapped...*, *op. cit.*

70 *Ibid.*

71 'Nowy harmonogram prac nad polską elektrownią jądrową. Oto daty', Business Insider, 11 December 2024, businessinsider.com.pl.

Poland's ongoing transition in the power sector entails enormous investment costs – not only in new generation capacity and grids but also in modernising its outdated and underfunded infrastructure.[72] The transition also involves a geographical shift in energy production from the south to the north of the country and poses social challenges, particularly the need for a just transition in coal-dependent regions. These factors will directly impact energy costs. Meanwhile, the effects of the energy crisis – including higher and more volatile commodity prices – along with rising carbon emission allowance costs, have already led to significant increases in electricity and heating prices for consumers. In 2024, Poland had some of the highest industrial energy and gas prices among the countries under review. It was also among the EU states with the highest average annual spot prices for electricity, alongside the Southeastern European countries and Italy.[73]

This issue could worsen in the coming years, depending on the pace of carbon price increases and the structure of domestic power generation. Rising energy costs are already affecting economic competitiveness, as Poland has a highly energy-intensive industrial sector. This has resulted in production cuts, particularly in steelmaking, as well as financial difficulties and asset sell-offs, notably in the chemical industry.[74] The situation may be further exacerbated by the planned inclusion of buildings and transport in the EU Emissions Trading System (ETS 2), given the relatively low level of decarbonisation in these sectors. In addition to increasing costs, this would place an additional burden on households and worsen energy poverty.

[72] In Poland, 39% of overhead power lines are over 40 years old. The cost of modernising medium-voltage lines by converting them from overhead to underground is estimated at approximately 48 billion PLN. See W. Modzelewski, *Sieci – wąskie gardło polskiej transformacji energetycznej*, Fundacja ClientEarth Prawnicy dla Ziemi, July 2022, clientearth.pl.

[73] *Average electricity spot market prices in 2024*, Energy Charts, energy-charts.info.

[74] G. Kowalczyk, 'Państwowy gigant się wyprzeda, bo stoi nad przepaścią. „Sytuacja jest dramatyczna"', Business Insider, 16 January 2025, businessinsider.com.pl.

8. Romania

Romania has low dependence on energy imports and is expanding its natural gas production while also planning to increase the role of renewables and nuclear power. Its key challenges include high energy prices and the impact of the war on energy security in the Black Sea and its immediate neighbourhood.

Romania		energy transition	energy security	affordability
CURRENT STATE	Fairly clean electricity mix (hydropower, nuclear, renewables), but still includes coal and gas	✓		
	High self-sufficiency, low dependence on energy imports		✓	
	High and volatile prices as a key issue			✓
CHALLENGES	High prices and taxes, regulatory uncertainty		✓	✓
	Security of critical energy infrastructure, trade, and extraction (Black Sea)		✓	✓
	Impact of energy problems in neighbouring countries (Moldova, Ukraine)		✓	
GOALS	Expanding offshore extraction, regional role as a gas hub		✓	✓
	Expanding nuclear and renewable energy, minimising imports	✓	✓	✓
	Supporting coal phase-out, ensuring a just transition	✓	✓	✓
	Preventing high and uneven energy prices in the EU			✓

Romania is relatively advanced in its energy transition. Since 1990, it has recorded one of the largest reductions in emissions both in the region and within the EU. It aims to cut emissions by over 90% by 2040.[75] Currently, more than 60% of the country's electricity comes from clean sources, primarily hydropower and nuclear energy. Romania plans to continue the rapid expansion of renewables, especially wind and solar farms, while also expanding its nuclear power plant in Cernavodă. Two new reactors, based on Canadian technology, are scheduled for completion in 2030–2031,[76] and small modular reactors are also being considered.

At the same time, over 15% of Romania's electricity is still generated from gas, while nearly 20% comes from coal. Phasing out coal and closing mines remains a socially sensitive issue, and there is no clear strategy for transitioning coal-dependent regions. Another key challenge is upgrading outdated and

[75] See *Planul național integrat în domeniul energiei și schimbărilor climatice 2025–2030*, Romanian Ministry of Energy, October 2024, energie.gov.ro.

[76] 'EC approves completion of Romanian reactors', World Nuclear News, 4 July 2024, world-nuclear-news.org.

insufficient energy networks, which is essential for integrating the growing share of renewables.

Due to its domestic oil and gas resources and increased production, along with the rising share of nuclear and renewable energy, Romania is one of the least import-dependent countries in Central and Eastern Europe and the EU. It also aims to further reduce its reliance on imports and position itself as an energy exporter. Since early 2025, in response to Moldova's energy crisis, Romania has been exporting electricity to its eastern neighbour. Meanwhile, the development and initial exploitation of Black Sea gas fields – especially the Neptun field – and new transmission infrastructure are intended to make Romania the EU's largest natural gas producer and exporter. Additionally, Romania's energy strategy, adopted at the end of the 2024, includes plans to resume domestic uranium extraction.[77]

Expanding cross-border connections could strengthen Romania's regional role, deepen integration, and enhance its energy security.[78] Offshore infrastructure is considered particularly vulnerable to sabotage, primarily from Russia. In its approach to energy and transmission system security, Romania also takes neighbouring Moldova into account as due to historical and cultural ties, this country remains under Bucharest's special protection.

Perhaps the most pressing challenge is the high cost of energy and gas. In 2024, Romania recorded some of the highest wholesale electricity prices in the EU.[79] This is partly due to internal factors such as the generation structure, low market liquidity, and an inefficient regulatory environment. However, it also reflects broader trends in Southeastern Europe, including limited regional integration, and weak connections with the rest of the EU.[80] Persistently high prices could impact public sentiment and reduce the competitiveness of Romanian industry. In response, Romania, along with Bulgaria and Greece, has called on the European Commission to take action to address significant price

77 D. Dalton, 'Romania / Energy Plan Sees Long-Term Shift To Nuclear And Return To Uranium Mining', Nuclear News Agency, 25 November 2024, nucnet.org.

78 A. Sabadus, 'Liquid markets key to Romanian electricity, gas expansion – energy minister', Independent Commodity Intelligence Services, 23 January 2025, icis.com.

79 *European electricity prices and costs*, Ember, ember-energy.org; 'Romania Eficienta Completes a New Energy Renovation Project', Energy Industry Review, 22 January 2025, energyindustryreview.com.

80 M. Kirsch, 'South-eastern Europe has a power problem – CESEC can help solve it', Balkan Green Energy News, 1 November 2024, balkangreenenergynews.com.

disparities within the EU, including by supporting the expansion of electricity interconnections.[81]

9. Bulgaria

Bulgaria has significantly reduced its dependence on Russian energy resources. Key challenges include decarbonisation – where nuclear energy is expected to play a crucial role – phasing out coal, modernising and expanding energy infrastructure, and improving energy efficiency in the economy. Rising energy prices are becoming an increasingly pressing issue.

Bulgaria		energy transition	energy security	affordability
CURRENT STATE	Significant reduction in dependence on Russian energy resources		✓	
	High energy prices			✓
	Large share of coal and nuclear energy in the energy mix	✓		
	Outdated energy infrastructure	✓	✓	✓
CHALLENGES	Phasing out coal (no plan, opposition from society and industry)	✓		✓
	Low share and slow development of renewables	✓	✓	
	High levels of energy poverty			✓
	Rising energy prices (generation structure, weak EU integration, decarbonisation and diversification costs)	✓	✓	✓
GOALS	Bulgaria as a regional energy hub (mainly gas)		✓	✓
	Construction of two nuclear power plant units without Russian technology	✓	✓	
	Just transition – reducing social and economic costs of decarbonisation	✓		✓
	Reducing energy intensity of the economy (industry, construction)	✓		✓

Coal, mined domestically, continues to play the central role in Bulgaria's primary energy mix and electricity generation. Its use temporarily increased during the energy crisis, with coal accounting for as much as 43% of electricity production in 2022. Nuclear energy is the other most important source, providing around 30–40% of the country's electricity. Bulgaria plans to build two additional nuclear reactors at the Kozloduy power plant to accelerate the decarbonisation of its power sector. In November 2024, it signed an engineering services contract with Westinghouse and Hyundai,[82] but a final contract is yet to be concluded.

[81] C. Mihai, 'Romania, Greece, Bulgaria request measures to address higher energy prices', Euractiv, 3 October 2024, euractiv.com.

[82] 'Westinghouse Signs Contract for Engineering of AP1000® Reactors in Bulgaria', Westinghouse Electric Company, 4 November 2024, info.westinghousenuclear.com.

The development of renewable energy sources in Bulgaria has been relatively slow. In 2022, hydropower played the most significant role among renewables, contributing 8% of electricity generation. While there is potential to expand hydropower production, it remains largely untapped.[83] Over the past two years, however, solar energy has gained importance,[84] becoming the country's largest renewable energy source with strong growth prospects. As Bulgaria's energy mix continues to decarbonise, nuclear and solar power will form its backbone. The country's outdated energy infrastructure, which requires modernisation and expansion, presents major challenge for integrating renewables.

There is also no clear roadmap for phasing out coal-based power generation. Key obstacles include government subsidies for coal plants, delays in liberalising the electricity market, and the lack of a viable strategy to replace coal-fired power stations in stabilising and balancing the grid. Political instability and frequent government changes in Sofia have further complicated access to EU funds, particularly under the Recovery and Resilience Fund, which could support the transition.[85]

Until recently, Bulgaria was one of the region's largest electricity exporters. However, declining available capacity and rising prices have reduced exports,[86] and the country now periodically imports cheaper electricity from neighbouring states, primarily Turkey and Serbia, which are outside the EU's Emissions Trading System (ETS). Additional challenges include low public support for climate policies[87] and protests against plans to phase-out coal.[88] These tensions are exacerbated by Bulgaria's high level of energy poverty, which is among the worst in the EU.[89]

As a result, high energy prices remain one of Bulgaria's most pressing challenges – if not the most urgent. Electricity prices are driven by structural

[83] 'BEMF appeals for effective reforms in 10 critical areas in energy', The Confederation of Employers and Industrialists in Bulgaria (KRIB), 6 September 2024, krib.bg/en.

[84] Growing from approximately 4% in 2022 (IEA) to 13.4% in 2024 (according to estimates by the Ember think tank). See *Electricity Data Explorer*, Ember, ember-energy.org.

[85] G. Gotev, 'New Bulgarian PM tries to salvage EU funds', Euractiv, 23 January 2025, euractiv.com.

[86] M. Miteva, 'Bulgaria's power output falls 5% in 2024, consumption grows', SeeNews, 7 January 2025, seenews.com.

[87] D. Yougova, *Bulgaria's climate action strategy*, Roadmap to EU climate neutrality – Scrutiny of Member States, European Parliamentary Research Service, December 2024, europarl.europa.eu.

[88] E. Ahmadzai, 'Bulgaria's coal transition triggers massive protests and political tension: Miners say no, market says yes', Kapital Insights, 12 October 2023, kinsights.capital.bg.

[89] 'BAS economists: Bulgaria registers one of the highest levels of energy poverty in the EU', Bulgarian Academy of Sciences, 23 May 2024, bas.bg.

issues, including the country's energy mix, its reliance on imports, high gas prices and emissions costs. Regional factors, such as Southeastern Europe's limited integration with the rest of the EU, also contribute to the problem. This has prompted Bulgaria and its neighbours to seek support from Brussels.[90] So far, Bulgarian households have been largely shielded from price hikes, but this has placed a significant burden on the state budget. Regulated electricity prices have also begun to rise, increasing by 8.5% in January 2025.[91] High energy costs are an escalating problem for Bulgarian industry, as indicated by growing protest threats.[92] In response, the government introduced a compensation programme at the start of 2025 to mitigate the impact of excessive prices.[93]

Bulgaria no longer imports Russian oil, it does not receive gas under a long-term contract with Gazprom, and is testing alternatives to Russian nuclear fuel.[94] However, Russian gas continues to be traded on the Balkan Energy Hub, strengthening Bulgaria's role as a regional energy hub and enabling cheaper gas deliveries to Greece and Bulgaria compared to LNG. Consequently, under favourable political conditions (such as the lifting of sanctions) and economic circumstances (lower prices), Bulgaria may consider expanding its energy cooperation with Russia.

90 E. Milcheva, K. Nikolov, 'Experts dash hopes of EU compensation for high electricity prices in the Balkans', Euractiv, 25 October 2024, euractiv.com.

91 'Bulgaria regulator approves 8.42% hike in electricity prices for household consumers', The Sofia Globe, 2 January 2025, sofiaglobe.com.

92 'Bulgaria: Employers and Unions Announce National Protest Over Rising Electricity Costs', Novinite Sofia News Agency, 9 January 2025, novinite.com.

93 'Bulgaria Shields Businesses from High Electricity Costs Until March', Novinite Sofia News Agency, 23 January 2025, novinite.com.

94 'Westinghouse to licence Kozloduy fuel', Nuclear Engineering International, 23 January 2025, neimagazine.com

10. Croatia

Croatia is no longer dependent on Russian energy, focusing instead on developing renewables and nuclear cooperation with Slovenia. However, it faces challenges related to infrastructure adequacy, security and resilience, in part related to cyber threats and outdated energy networks.

Croatia		energy transition	energy security	affordability
CURRENT STATE	Clean energy mix: two-thirds of electricity from renewables; joint nuclear power plant with Slovenia (imports)	✓		
	End of energy imports from Russia		✓	
	Importance of energy cooperation with neighbouring countries		✓	✓
CHALLENGES	Outdated transmission infrastructure and exposure to cyberattacks		✓	✓
	Diversification costs and dependence on electricity imports		✓	✓
	Vulnerability to impacts of climate change (heavy reliance on hydropower)	✓	✓	
GOALS	Building a gas hub (connections with Hungary, Slovenia, and Bosnia and Herzegovina)		✓	
	Expanding nuclear energy generation with Slovenia and renewable energy potential	✓	✓	✓
	Keeping prices low for households and the tourism industry			✓

Since the outbreak of the war in Ukraine and the subsequent EU and Russian restrictions, Croatia has stopped directly importing Russian hydrocarbons.[95] The LNG terminal on the island of Krk, which is currently being expanded, has been a key factor in reducing the dependence on Russian gas. With the halt of gas transit through Ukraine and the unavailability of Russian gas on the Baumgarten exchange, Croatia has also stopped importing Russian energy resources indirectly.

Infrastructure development in recent years has played a crucial role in securing Croatia's energy supply. Improved connections with neighbouring countries have strengthened its transit role, as gas and oil flow through Croatia to other Balkan and Central European states, with hydrogen potentially being transported in the future. This also supports Croatia's ambition to become a regional energy hub.[96] At the same time, cross-border interconnections integrate the country with regional energy markets and facilitate the import

[95] Croatia imports only vacuum gas oil (VGO) from Russia, for which it has obtained a sanctions exemption until the end of 2025. See E. Gergondet, P.V. Schueren, N. Mizulin, D. Geraets, 'EU adopts 15th sanctions package against Russia... and more', Mayer Brown, 17 December 2024, mayerbrown.com.

[96] 'Meeting of the European political community: LNG terminal makes Croatia a serious energy hub' Government of the Republic of Croatia, 17 August 2024, vlada.gov.hr.

of necessary energy carriers. Electricity imports from Slovenia, which cover 15% of Croatia's consumption, are a key element. These come from the jointly owned and operated Krško nuclear power plant, located on the Slovenian side of the border. Both countries have extended the plant's operational lifespan to 2043[97] and are considering building a second reactor.[98] Croatia also imports electricity from Hungary, Bosnia and Herzegovina, and Serbia.

Croatia has one of the cleanest energy mixes in CEE, with around 64% of its electricity generated from renewables in 2022, primarily from hydropower and wind farms. Gas-fired power plants play a transitional yet stabilising role, balancing a system increasingly reliant on intermittent renewable sources. Zagreb plans to expand its solar and wind capacity further and aims to fully decarbonise electricity generation by 2033. With the planned expansion of Slovenia's nuclear power plant, it also seeks to decarbonise electricity consumption while reducing its dependence on energy imports from further abroad. However, challenges remain, including outdated power grids, frequent cyberattacks (up to 30 per day), and administrative and bureaucratic barriers.

Climate change poses additional risks to Croatia's energy sector, economy and society. Droughts and floods are reducing the efficiency of hydropower plants, the country's main electricity source. Along with the costs of energy diversification, these factors are driving up energy prices, impacting household budgets and the tourism sector – one of the pillars of Croatia's economy.

[97] M. Vujasin, 'Krško nuclear power plant to extend operation for another 20 years', Balkan Green Energy News, 18 January 2023, balkangreenenergynews.com.

[98] 'Slovenia estimates cost of JEK2 nuclear new build project', Nuclear Engineering International, 29 May 2024, neimagazine.com.

11. Slovenia

Slovenia has low energy import dependence mainly due to its domestic nuclear energy sector. However, it needs to expand nuclear capacity, accelerate the development of renewables, and complete its decarbonisation process. The country no longer sources energy from Russia and is steadily diversifying its gas and oil supplies.

Slovenia		energy transition	energy security	affordability
CURRENT STATE	High self-sufficiency, key role of nuclear and coal energy	✓	✓	
	Large share of clean electricity in the energy mix (nuclear and renewables)	✓		
	Strong infrastructural connections with neighbours		✓	
	Rising prices			✓
CHALLENGES	Phasing out coal (political and social pressure, cost of alternatives)	✓		✓
	Pace of renewable energy development (hydropower expansion constraints)	✓	✓	
	Dependence on Western European markets and their problems (Germany, automotive industry)		✓	✓
GOALS	Expanding nuclear energy	✓	✓	✓
	Expanding existing gas connections with neighbouring countries		✓	✓
	Mitigating rising prices			✓
	Recognition of nuclear and gas energy in EU transition and regulations	✓	✓	✓

Slovenia's energy transition is built on two main pillars: nuclear power from the Krško nuclear plant which it jointly operates with Croatia, and hydropower. Together with solar farms, these clean energy sources provide three-quarters of the country's electricity generation. At the same time, coal's share in the energy mix is being reduced (currently at 20%). However, a full decarbonisation, planned for 2033, presents socio-economic challenges, including those related to the costs of transition.[99] Additionally, balancing the energy system and preventing a generation gap remain key concerns.

Slovenia plans to replace coal-fired plants first with gas (as a bridging fuel) and eventually with nuclear, hydro and solar energy. However, the Slovenian-Croatian project to build a second unit at the Krško nuclear plant remains uncertain due to financial model challenges and a lack of EU support. The decision on its modernisation and expansion is expected by 2028. If implemented, nuclear

[99] E.g. the Velenje lignite mine and the Šoštanj thermal power plant employ over 3,000 people, and to avoid mass layoffs, they continue operating at minimal levels, incurring financial losses.

power could meet up to 50% of Slovenia's electricity demand. This is particularly important given the limitations on expanding renewables. Hydropower capacity cannot be significantly increased due to natural constraints, while large protected areas reduce the land available for wind and solar farms.[100] These factors – along with bureaucratic hurdles, high costs, and insufficient grid development – have slowed the growth of renewable capacity, a point of criticism from the European Commission.[101]

Since 2022, Slovenia has massively reduced its reliance on Russian energy imports, completing this process in 2024. With the halt of gas transit through Ukraine and reduced access to Russian gas via the Baumgarten hub in Austria, further infrastructure expansion with neighbouring countries and deeper cooperation with Croatia and Italy are necessary. Despite its relatively high energy independence, Slovenia is well integrated into regional electricity networks, allowing for energy trade and enhancing supply security.

Slovenia is also affected by the broader European challenges facing energy-intensive industries, particularly due to high energy prices and competitive pressures. Around 10% of its GDP and 20% of its export revenues come from its struggling automotive sector, which is heavily dependent on the German, French and Italian markets. As these Western European economies face difficulties, Slovenia feels the impact.[102] While the government introduced a price regulation mechanism after the 2022 energy crisis, the support did not extend to the largest companies, including those most exposed to the downturn on the German markets.

[100] More than 37% of Slovenia's territory – the highest share in the EU – is designated as Natura 2000 areas.

[101] *Slovenia. Summary of the Commission assessment of the draft National Energy and Climate Plan 2021–2030*, European Commission, energy.ec.europa.eu.

[102] See e.g. E. Albert, 'Slovenia caught in the German slowdown trap', Le Monde, 29 October 2024, lemonde.fr.

12. Germany

Germany is advanced in its power sector transition and has ambitious plans both domestically and at the EU level. It has successfully and rapidly diversified its energy supply, minimising its dependence on Russia. However, rising energy prices are becoming an increasing challenge, leading to a more pragmatic approach in Germany's energy policy.

Germany		energy transition	energy security	affordability
CURRENT STATE	Independence from direct Russian energy resources imports; rapid diversification		✓	
	Significant emission reductions and ambitious plans, but still EU's biggest emitter	✓		
	Implementation of Energiewende with growing focus on competitiveness, pricing and pragmatism			✓
CHALLENGES	Transition costs (who will bear them?); public support for the process	✓		✓
	Security and stability of a renewables-based energy system	✓	✓	✓
	Security of critical infrastructure and trade (Baltic Sea, Norway)		✓	
	Residual dependence on Russia; strong reliance on imports		✓	✓
GOALS	Maintaining influence on EU and member states' energy-climate policy	✓	✓	✓
	Developing the hydrogen economy domestically and in the EU, producing green hydrogen		✓	✓
	Expanding grids and backups, curbing price increases for consumers	✓	✓	✓
	Stable and secure imports		✓	✓

For years, Germany's energy policy prioritised decarbonisation, often at the expense of security and competitiveness. However, following Russia's invasion of Ukraine and the 2022 energy crisis, the emphasis has become more balanced, with greater attention given to energy security and affordability. This shift does not signal a retreat from Germany's transition model or a weakening of its climate ambitions. Instead, it reflects a more pragmatic approach, such as flexibility regarding hydrogen sources and the use of carbon capture, utilisation and storage (CCUS) technologies.

Germany has been implementing its power sector transition strategy for over two decades and is among the most advanced in the EU. Nuclear power has been phased out, renewables now account for more than 50% of the electricity mix (with a target of 80% by 2030), and coal's share has fallen below 30%. While these developments have led to a steady decline in emissions, Germany remains the EU's largest emitter[103].

[103] According to data from the Federal Environment Agency, greenhouse gas emissions in 2023 totalled 674 million tonnes of CO_2 equivalent, a 46% decrease compared to 1990. Although the energy sector

The key challenges of *Energiewende* include:

- aligning renewable energy expansion with grid development,
- ensuring system stability as reliance on renewables grows,
- building a fleet of dispatchable gas-fired power plants as backup,
- reducing the costs of transition for both the state and end users – particularly by lowering energy prices for households and businesses to maintain public support for *Energiewende*.

Germany's high dependence on energy imports[104] makes securing stable and competitively priced supplies, as well as protecting critical infrastructure and import routes, an ongoing challenge. Any further decarbonisation of both the energy sector and industry will require the development of a hydrogen economy, from production and transport to the import and use of low-emission, cost-competitive hydrogen.

Germany's external energy policy remains focused on shaping the EU's energy and climate agenda – especially regulatory frameworks – and, through this, influencing the energy transition trajectories of other member states. Berlin continues to prioritise deeper EU energy integration, the global promotion of decarbonisation and green technologies, and efforts to establish uniform competition standards across industries. This includes expanding and harmonising emissions trading systems and integrating carbon footprint considerations into international trade.

The transition of the heating and transport sectors has proven more challenging than expected. Unlike power sector reforms, these changes directly affect citizens and have sparked significant domestic controversy. In these areas, Germany sees the Europeanisation of climate policy instruments – particularly the introduction of the EU ETS 2 – as a key solution.

has seen the fastest reduction (-57% since 1990), it remains the most emission-intensive sector due to the continued significant share of coal in the energy mix, with emissions reaching 203 million tonnes of CO_2 equivalent in 2023.

[104] Among the main energy resources, imports cover 100% of Germany's demand for hard coal, 98% for crude oil, and 95% for natural gas.

IV. SUMMARY AND CONCLUSIONS

1. War, transition and questions about EU energy policy

Since the outbreak of Russia's full-scale war with Ukraine, energy security, affordability and the EU's economic competitiveness have become increasingly important policy objectives. This shift has occurred alongside the acceleration of the EU's climate agenda. Pursuing all three of these objectives – often referred to as the energy trilemma – simultaneously presents a significant challenge. In many areas, these goals align or complement each other, such as efforts to enhance energy self-sufficiency and diversify sources, which both reduce the dependence on Russian imports and fossil fuels. However, in other areas, trade-offs, sequencing or prioritisation are necessary. At the same time, the debate over the relative importance of these objectives for the EU and its member states, and how they interact, has brought discussions back to the fundamental principles of EU energy policy.

The objectives of EU energy policy. A key question is determining what the EU's overarching energy policy goal should be. Traditionally, its primary purpose has been to ensure stable, sustainable, and affordable energy supplies. However, in recent years, energy policy priorities have been increasingly subordinated to broader objectives, such as achieving climate neutrality, ensuring economic and social security, boosting industrial competitiveness, and even – increasingly in recent times – contributing to the EU's hard security. For EU energy policy to be effective, its core objectives must be clearly defined.

Balancing short- and long-term challenges. The current policy focus has shifted towards the short-term risks, driven by the ongoing war, shifts in international politics (including US policy), and the immediate energy security challenges. These include the halt of energy transit through Ukraine, infrastructure damage, sanctions and market price fluctuations caused by energy market shifts or geopolitical events. However, the strategic goals of decarbonisation and increasing the EU's economic competitiveness are much longer-term in nature. It is therefore crucial to assess how the immediate uncertainty, challenges and needs impact the EU's long-term energy objectives – their definition, feasibility, and implementation – and what policy needs to be designed to address both the short- and long-term needs.

Between self-sufficiency and international cooperation. Russia's aggression against Ukraine and the resulting energy crisis have exposed the risks

of being (over)dependent on third countries. The EU has drastically reduced imports of Russian energy resources and is striving to eliminate them entirely. At the same time, there is a growing awareness of other strategic dependencies in key areas, such as critical raw materials and clean technologies, particularly those sourced from China. This has led to calls for greater strategic autonomy and energy self-sufficiency.

However, reducing dependency is highly challenging due to the EU's limited domestic resources (not only in terms of hydrocarbons but also as regards critical raw materials), climate policy requirements, an innovation gap, the fact that the production of many clean energy technologies is located outside Europe, and cost constraints. It is therefore necessary to clarify how to balance increased self-sufficiency with the need for international cooperation, and to define the criteria for shaping this cooperation.

Europeanising energy policy and the role of member states. The accelerating energy transition, the increasing decentralisation of energy systems within the EU, growing internal cooperation and integration, and EU climate targets have all strengthened the role of EU institutions in shaping energy policy. This raises questions about the role of member states and their actual competences and prerogatives in this area, such as their autonomy in determining their energy mix or the protection of cross-border infrastructure. These issues are particularly important in times of political instability, war and economic challenges, including high energy prices. Populations usually expect their democratically elected governments to address these issues, and turbulent times often reinforce protectionist tendencies.

2. Objectives and interests of the Central and Eastern European countries and Germany

In the context of the dilemmas outlined above regarding the shaping of EU energy policy and the need to simultaneously pursue three distinct energy trilemma objectives, it is important to map and account for the key related goals and interests of the individual member states – including those from Central and Eastern Europe and Germany.

Agency in the EU. The ongoing energy transition, and the related EU energy and climate law (the Fit for 55 and REPowerEU packages), provides the framework within which all member states pursue their core energy interests. At the same time, driven by national priorities or identified key challenges, countries

seek to shape this legislation to enable the achievement of their strategic interests. Recent efforts by several Central European countries to postpone or amend provisions related to ETS 2 or CBAM, discussions about the 2040 climate targets, the pace and manner of reducing imports of energy resources from Russia, and, on a more general level, debates over a new EU energy security strategy or the details of the European Commission's Competitiveness Compass all illustrate these endeavours. However, EU member states vary in their ability to influence EU law and in their overall effectiveness. As a result, the measures undertaken by Germany appear significantly more successful than those of the Central and Eastern European countries. It seems that one of the key common interests for countries in this region is to increase their agency in this area. A challenge remains the relatively unfavourable voting power of these states in the Council of the European Union, as their combined votes to not constitute a blocking minority.

Cohesion among the Central and Eastern European countries. Furthermore, the differences in interests between countries in the region are becoming increasingly visible. In the case of energy security, divergent approaches to abandoning energy cooperation with Russia are particularly apparent – with Hungary and Slovakia showing a reluctance to do this. Differences are also discernible in the pace and trajectory of the transition of the power sector, where countries in the region follow different paths. Consequently, distinct groups have emerged with differing dominant sources in power mixes and, therefore, divergent interests (see below). Additionally, individual countries in the region are increasingly entering into various EU coalitions based on specific interests (for example, the European Nuclear Alliance). The greatest common interests among the CEE's countries appear to be linked to challenges such as high energy prices and their negative impact on economic competitiveness. However, this is a widespread issue across the EU, and the preferred solutions may differ between countries in the region (for instance, between those where energy-intensive industry plays a larger role, such as Poland and the Czech Republic, and those where it is less significant, such as Lithuania and Estonia). As a result, it may be expected that the individual Central and Eastern European countries will pursue their interests within the EU not only through regional cooperation but also increasingly through various other constellations of member states.

Regional cooperation. Despite growing differences, the need to ensure security, the ongoing transition, and challenges related to energy prices are increasing the importance of effective cooperation – if not across the entire CEE,

then within subgroups of regional states (for example, those with similar or complementary interests in some areas) – as well as of good neighbourly practices in the energy sector. This has been seen for years in the Baltic countries (in the electricity and gas markets) and in the Croatian-Slovenian cooperation (the Krško nuclear power plant). Recently, similar problems and interests have become visible in many areas – such as energy prices, fuel poverty or the necessity of expanding interconnections with the rest of the EU – in Romania and Bulgaria. Good cooperation with neighbours is also essential for enabling the effective diversification of supplies for landlocked countries such as the Czech Republic, Slovakia and Hungary. Finally, in recent years, the importance of Central European countries has grown not only in providing critically important energy or fuel supplies to Ukraine or Moldova, but also in integrating them into the EU single market. As a result, it appears to be important to support regional cooperation between these countries and, at times, to help resolve the obstacles which hinder it (as in the case of the issues between Croatia and Hungary).

De-russification and energy security. Before the outbreak of the war in Ukraine, all the countries discussed were heavily dependent on Russian oil and gas supplies. Some also imported coal and nuclear fuel from Russia. Currently, most of them have completely eliminated this dependence (as seen in the Baltic states and Poland) or have substantially reduced it (as in the Czech Republic and Bulgaria). However, there are exceptions. The most striking example is Hungary, which has not only failed to reduce its cooperation with Russia but has even extended it. Slovakia has reduced its import of Russian gas partly on its own initiative and partly (from early 2025) as a result of the cessation of transit through Ukraine, but it continues to import oil from Russia and lobbies for the resumption of supplies via Ukrainian pipelines. Such enduring dependencies weaken these states, exposing them to energy blackmail from Russia, entangling them in multi-level dependencies and hindering diversification. This is also a weakness for the entire EU, as it undermines EU unity in its policy towards Russia and diminishes the effectiveness of existing sanctions and the probability of there being new energy sanctions aimed at limiting Russia's capacity to wage further war – including hybrid warfare against the West.

In addition, due to the absence of EU sanctions on Russian gas, Russia can still resume supplies under existing contracts or via the market (as is the case with Bulgaria's Balkan Gas Hub). This could undermine the economic viability of alternative supplies and hinder the finalisation of the move away from a dependence on Russian energy resources, further dividing the EU. A priority

for the CEE countries should therefore be to find a way to overcome existing differences and achieve a complete phase-out of Russian energy resources (in line with the objectives of REPowerEU) by imposing sanctions on both LNG supplies and pipeline-delivered gas, as well as fully implementing the sanctions already in force.

Critical infrastructure and the role of the seas. Parallel to the ongoing energy war between the EU and Russia, all countries in the region see the increased importance of the need to secure critical energy infrastructure and the routes for the supply and transport of energy carriers and raw materials. This involves enhancing effective cooperation in monitoring, protecting and preventing both acts of sabotage and accidents in the Baltic and Black seas. These measures may not only improve energy security and supply reliability, but also facilitate the realisation of crucial investments for the energy transition, such as offshore wind farms or hydrogen corridors. In light of the symbolic and strategic importance of synchronising the power systems of the Baltic states and continental Europe, ensuring the security of the energy infrastructure that supplies these countries appears paramount, especially in 2025.

Infrastructure and grids. The vast majority of countries in the region face issues with outdated energy networks that require expansion and modernisation, and in some cases – with gas networks as well. Differences in grid density and the degree of integration of Central and Eastern European countries compared to those in Western Europe are still clear. These disparities create challenges for the pace of the energy transition and the integration of renewable energy sources, as well as for the security, resilience and stable functioning of the system, ultimately affecting energy prices (as was observed in 2024 in the Southeastern European countries). In both the region and Germany, as in the rest of the EU (although likely on a larger scale in Central and Eastern Europe than in Western Europe), it is necessary to expand electricity grids and find a sustainable way to cover the enormous costs involved – costs that, in turn, will probably lead to further increases in final energy prices. Some countries still face the challenge of diversifying gas sources and financing the associated, at least targeted, investments in gas infrastructure, including interconnectors (especially Slovakia and Hungary). At the same time, some countries in the region also face problems with outdated power blocks (as in Bulgaria and Poland), which poses risks of failures and shortages.

Transition of the power sector. The region's countries increasingly differ in terms of their pace and progress in transforming their power sectors. Among

those still relying on coal – and generally possessing a significant energy-intensive domestic industry – are the largest EU greenhouse gas emitters (including Germany and Poland) and countries with the highest overall economic emissions (Bulgaria, the Czech Republic and Poland). For these states, completing the decarbonisation of the electricity generation sector remains a major challenge and financial burden. At the same time, there are countries in the region where the reduction in emissions since 1990 has been the highest in the EU (as in Estonia) and whose power mixes are among the cleanest in the EU (Latvia, Slovakia, Lithuania and Croatia). The cleanliness of the generation mix in the region is achieved through various means. Latvia and Lithuania rely primarily on renewable sources (with a significant share of biomass in Latvia), Croatia on hydropower, and Slovakia on nuclear energy (with minimal renewables). This demonstrates that, in terms of the power sector transition, the region is no longer a monolith and clear subgroups are emerging with similar transition paths, mixes and, consequently, interests and challenges.

Nuclear energy. The majority of countries in Central and Eastern Europe view nuclear energy as a stable and clean source of electricity (and potentially heat) that, together with renewables, can help them achieve the decarbonisation targets. Most are either expanding their existing potential or planning to build new nuclear blocks (Bulgaria, the Czech Republic, Croatia and Slovenia, Slovakia, Romania, Hungary and Poland, which is planning its first nuclear power plant). Consequently, they advocate for technological neutrality and recognition of the importance of nuclear energy at the EU level (for instance, in achieving climate goals) as well as for ensuring a level playing field regarding access to support, including in financial terms. One factor that differentiates countries with nuclear power is their cooperation with Russia in this sector. Notably, Hungary is planning to build another block in partnership with Russia's Rosatom. The Baltic states, which have not used nuclear energy since 2010, do not rule out the construction of small modular reactors. Germany, by contrast, closed its last nuclear power plants in 2023 and does not plan to resume operations or build new ones, opting instead to complete its energy transition (and ideally also across the entire EU) solely on the basis of renewable energy.

The role of gas in the transition. Almost all the countries discussed in the report (with the exception of Estonia) still have a significant share of natural gas in their power mixes and as a primary energy source. Some countries, traditionally highly dependent on gas (such as Hungary and Romania), foresee a gradual reduction in its role, while others (such as Poland, the Czech Republic and Germany) will likely increase its use temporarily. However, gas currently

plays – and will continue to play – an important role in the power sector as a transitional fuel, enabling the balancing of systems that are increasingly based on intermittent renewable energy sources. In some countries (such as Hungary, Slovakia and Germany) it is also still used to a significant degree in the heating sector. Consequently, the region's countries have an interest in ensuring the role of natural gas in the short to medium term and in developing the competitive, preferably intra-EU (and neighbouring) production of low- and zero-emission gases. Additionally, in view of the drastic reduction in dependence on Russian gas and its possible complete elimination from the EU mix, along with the new dependencies this might create, it is in the interest of the countries concerned to develop an EU gas strategy – including an import strategy – aimed at ensuring stable and affordable supplies.

Moving away from coal (and oil shale). There remains a group of countries in the region that rely significantly on coal (or oil shale) for electricity generation. These include Poland, Estonia (oil shale), the Czech Republic, Bulgaria, Germany and Slovenia. In all these countries, the role of coal is diminishing and efforts are being made to completely phase it out in line with binding decarbonisation targets, the economic viability driven, among other factors, by the cost of emissions allowances and the impact of the cleanliness of the mix on investment attractiveness. This process, however, comes with challenges related to ensuring domestic energy security during the transition (avoiding generation gaps and/or an excessive dependence on imports and ensuring system balancing), energy prices (questions over the costs of alternative sources and generation, especially during periods of low renewable output and high demand across Europe) and the broader impact on the competitiveness of energy-intensive industries as well as other economic and social costs (primarily affecting coal or oil shale mining regions). These issues become even more critical in the context of mounting economic problems resulting from the high energy prices environment seen in recent years, international political instability, domestic issues or ongoing, often expensive, diversification efforts to move away from Russian energy. This may pose challenges for governments that must adhere to EU regulations while also responding to public sentiment and securing a democratic mandate for their actions. Consequently, it is crucial to carefully plan and manage this process in each country, taking into account the local specificities and the various implications of moving away from coal. It is also important to maintain EU support for a just, secure and affordable transition in the individual countries and regions.

ETS 2. It is also evident that for all the Central and Eastern European countries, the next stage of the transition – the decarbonisation of the building and transport sectors through the introduction of a new emissions trading system (ETS 2) – will pose a major challenge. This issue resonates strongly given the existing problem of high energy prices in the region. The implementation of ETS 2 and the reduction of emissions in new sectors of the economy will particularly affect countries that are still facing significant challenges in decarbonising their power sectors (such as Poland, the Czech Republic and Bulgaria). This is reflected in intra-EU discussions during which the majority of the region's countries are, to a greater or lesser extent, in favour of delaying the introduction of the new regulations, with some even advocating for them to be amended. Although ETS 2 will be democratically implemented – affecting all EU citizens – it will hit those in countries with weaker economies and lower purchasing power hardest. Consequently, it will be relatively more challenging for the Central and Eastern European countries (which include the poorest EU states – Romania and Bulgaria) and simpler for those in Northwestern Europe such as Germany. Moreover, some Western countries (including Germany[105]) have already been implementing measures to decarbonise heating and transport and even have mechanisms for emissions charges in sectors covered by ETS 2, thereby reducing the future scale of costs and allowing their societies to become accustomed to the process. For Germany, given its advanced progress in implementing a domestic emissions reduction system in transport and buildings, it is crucial that analogous rules are quickly introduced across the EU to avoid exposing its households to disproportionate additional costs compared to their EU neighbours, and to maintain its position as a leader and key architect of EU climate policy. Consequently, the issue of ETS 2 may become one of the most important energy topics where Central and Eastern Europe differ from Germany.

Energy prices. For all the Central and Eastern European countries, the most important issue – at least in the short term – is to halt and even reverse the rise in energy prices. In several countries, low energy prices for households constitute one of the basic electoral promises or the foundation of political success (as in Hungary and Slovakia), while in others, announced or implemented price increases (or the removal of protective price mechanisms introduced during the energy crisis) have sparked protests (as in Bulgaria). In all countries in the region, energy, heating and fuel bills are rising. As a result, social poverty – already high compared to the rest of the EU (highest in Bulgaria

[105] See M. Kędzierski, 'Germany adopts ETS 2 regulations', OSW, 31 January 2025, osw.waw.pl.

and Romania[106]) – is increasing, becoming a significant problem for sitting governments.

Meanwhile, the ongoing processes of moving away from fossil fuels and Russian imports, along with the overhaul of national energy systems, involve large investments and costs – at least during the transition – which often translate into higher final prices. In addition, further stages of decarbonisation, including the anticipated inclusion of the transport and building sectors in an emissions trading system, will also lead to further price increases. High energy prices, combined with rising costs for emissions allowances, also affect the competitiveness of the region's industries – with more companies in the energy-intensive sectors (such as the automotive, steel or chemical industries) reducing production or closing plants. Consequently, it is crucial for all the region's countries not only to limit the pace of price increases for end consumers (including households) but, perhaps more importantly, to find a way to slow down market price rises. Furthermore, it seems important to stimulate increased investment in innovation and research. The region's countries – especially those with a strong energy-intensive industry (Bulgaria, the Czech Republic, Poland, Romania, Slovakia and Hungary) – do not yet have clear plans for developing new industries or opening new areas of competitiveness.

Work on this text was completed at the beginning of February 2025.

[106] See 'Who's energy poor in the EU? It's more complex than it seems', European Commission, Joint Research Centre, 25 September 2024, joint-research-centre.ec.europa.eu.