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Towards a greener Visegrád group: Progress and challenges in the context of the European Green Deal

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Towards a Greener Visegrád Group:

Progress and Challenges in the Context of the European Green Deal

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Towards a Greener Visegrád Group:

Progress and Challenges in the Context of the European Green Deal

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Abstract

The European Green Deal, which aims to steer the EU towards climate neutrality, has traditionally been met with a degree of reluctance by the Visegrád countries. The convergence to green targets represents a particular challenge for these economies, given their fossil fuel-intensive industrial orientation and the high labour market exposure of certain regions to coal mining. In reality, progress with the green transition in the region has been mixed. The expansion of renewables has been scaled up in Slovakia and partially in Poland, but has been stagnating in Czechia and even decreasing in Hungary. In the building sector, states' retrofitting schemes are working well in terms of bringing down energy consumption in housing, despite the limited adoption of innovative heating techniques. In transport, the region focuses almost excessively on highly contested biofuels, whereas the use of green electricity for road transportation and rail systems remains negligible. Still, the Visegrád group has accomplished a remarkable catch-up in enhancing its energy efficiency in recent years, albeit still belonging to the most CO2-intensive regions in Europe. There are numerous obstacles to the green transition in the region, including lower starting points creating path-dependencies, lesser (albeit growing) social recognition of the climate crisis, and the fear of social fallout due to high employment in the coal and automobile sectors. At the same time, the Russian aggression against Ukraine has revealed the vulnerabilities of fossil fuel dependency, and as a result has broadened the pro-green-transition coalition. While it remains to be seen whether this momentum will turn into action, green pioneers such as Austria can take on a more active role by cooperating with and supporting the Visegrád countries in reaching their climate targets. This includes deepening cooperation on green electricity projects, strengthening basic research through cross-country consortia, or incentivising investment in the building and transportation sector, in which Austrian firms are well-positioned.

Keywords: Visegrád countries, European Green Deal, green transition, renewable energy

JEL classification: O130, Q580, Q420

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Towards a greener Visegrád group: progress and challenges in the context of the European Green Deal

1. INTRODUCTION

With its European Green Deal, the EU is pointing to a vision of a green Europe that is devoid of coal and other fossil fuels. According to the European Commission (2019, p.2) the European Green Deal represents 'a new growth strategy that aims to transform the EU into a fair and prosperous society… where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.' However, member states' positions with regard to this transition have been a point of division within the EU, bringing forward the need for 'environmental convergence' within the EU (Römisch, 2022). The differences are driven by various factors, reflecting countries' differences in terms of geographical location, natural resources, level of development, history and political traditions. One cluster of the divided EU includes, inter alia, the Visegrád countries: Poland, Hungary, Czechia and Slovakia. With their strong industrial orientation and high fossil fuel dependence, these countries are characterised by their relative reluctance to embark on the green transition. Indeed, in a joint statement of Prime Ministers of the Visegrád Group, the leaders emphasised the importance of not putting energy security and affordability into the background, the need to acknowledge significant differences in income levels across the EU in carbon pricing, and the higher investment needs faced by lower income EU Member States in light of the green transition (Visegradgroup.eu, 2021). The Czech government has at one point gone so far as to call the Green Deal an 'existential threat' for the country (Gosling, 2022). Such a negative position is in stark contrast to the mainstream pro-green Austrian stance. Despite Austria and the Visegrád countries being deeply integrated economically and financially, and sharing many common positions for the future of European economic development and integration, the green transition stands out as a notable point of divergence, leaving room for more cooperation in building a joint green future.

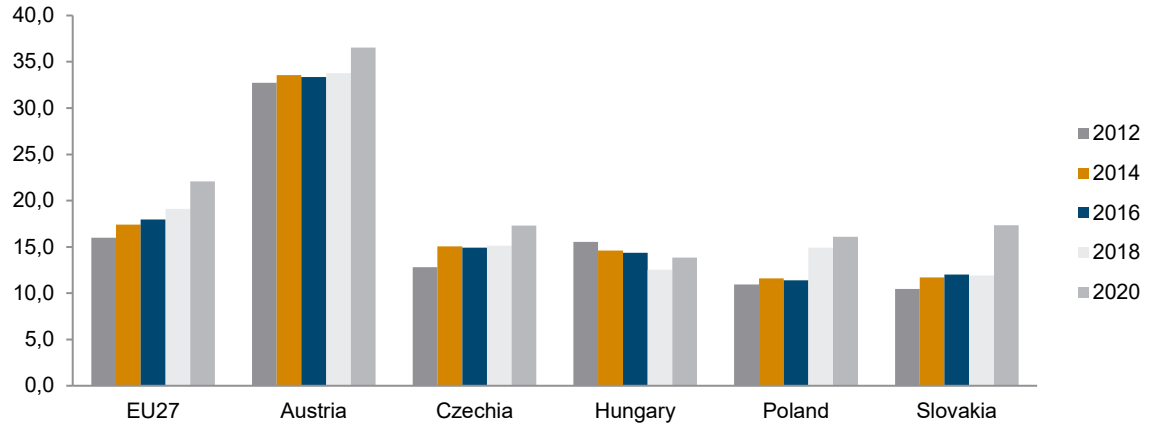
Still, beyond the image of the Visegrád countries as a uniform bloc opposing climate action, there are also notable differences between the four countries in the progress made, and between different aspects of the green transition. Hence, this policy note aims to evaluate the current developments in each country, relating the results to Austria and the EU27. We consider three different diagnostic features of the green transition in our comparative analysis, namely the share of renewable energy sources, the level of energy efficiency and resource productivity, as well as the quality of the circular economy. We then zoom into the main challenges related to the Visegrád group's progress with the green transition. Following the Russian invasion of Ukraine, advancing the green transition has gained particular relevance in the region. As Di Bella et al. (2022) show, the three landlocked countries of the Visegrád stand out as the most heavily exposed to Russian gas imports, and thus have been especially badly affected by reduced supply and higher prices. With energy prices in Europe anticipated to remain at very high levels over the medium-term (Moody's, 2022), there are additional stakes involved in the green transition related to energy security, and tackling the transition becomes ever-more relevant. Finally, the study considers ways in which the gaps between the Visegrád countries and Austria could be bridged, by coming up with joint strategies for the sustainable future development of the Central European region.

2. PROGRESS WITH THE GREEN TRANSITION IN THE VISEGRÁD COUNTRIES

Renewable sources in the energy mix

To comply with the Paris Agreement, the European Community has set itself the target of achieving climate neutrality by 2050. This requires levels of greenhouse gas (GHG) emissions to drop substantially, whereby the transformation of electricity, heat and transport sectors will play a pivotal role. Each EU Member State agreed to specific national targets that it can feasibly achieve. Czechia and Hungary agreed to achieve a 13% share of renewable energy sources by 2020, while Slovakia and Poland have consented to accomplish 14% and 15%, respectively (Heilmann et al., 2020). Despite lagging behind compared to the EU, all Visegrád countries have done relatively well in accomplishing their energy targets. With 17%, Slovakia has currently the highest share of renewable energy in its energy mix among Visegrad countries, followed by Czechia, Poland and Hungary (Figure 1). Hungary and Czechia managed to reach the 2020 targets the fastest. That said, the expansion of renewables in Czechia has been stagnant for some years since reaching their national goal in 2014, while the Hungarian share of renewables has even declined since 2012.

Figure 1 / Share of renewable energy sources in energy mix of Visegrád countries, Austria and EU27 from 2012 to 2020 (% of gross final energy consumption)



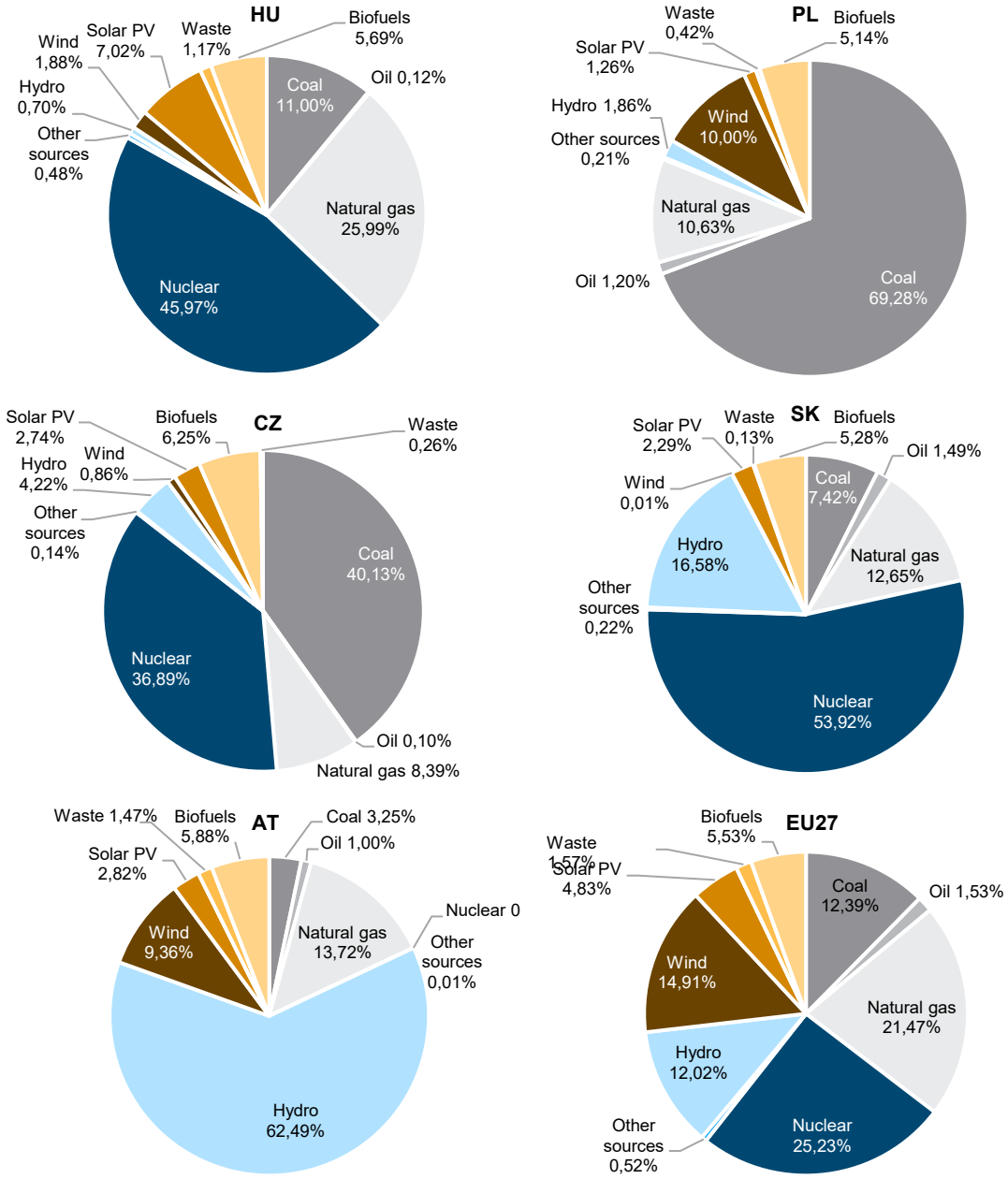
Source: Eurostat.

Electricity generation

Zooming into different sectors of energy use, electricity generation has the highest share of renewable sources in most member states. Austria is a clear leader, with renewables providing over 80% of the energy required for electricity generation. Taking Austria as a best practice example, one can see that the country generates more than 60% of its electricity from hydropower and almost 10% from wind energy. Only around 18% stems from fossil fuels. By contrast, as Figure 2 shows, all Visegrád countries struggle to reach comparable shares of renewable energy in their electricity mix. However, they exhibit marked differences in their energy compositions. While all four countries rely by and large on fossil fuels and nuclear energy, Poland stands out as the least prepared for the green transition from this angle,

generating electricity mostly from fossil fuels (81%). The combustion of coal alone accounts for almost 70%. What is more, only Poland intends to continue using coal until mid-century, whereas Slovakia (by 2023), Czechia (by 2023) and Hungary (by 2025) all announced plans to transition away from coal (Heilmann et al., 2020). Of the Visegrád group, decarbonisation of the electricity source is the most advanced in Slovakia, with 24% of electricity produced by renewables, in addition to nuclear energy generating more than half. Coal combustion has been put on the backburner in Slovakia, only amounting to 7%. Czech electricity production has two key pillars, namely nuclear energy (37%) and coal (40%). Hungary also relies quite substantially on nuclear energy (46%), followed by a big chunk of coal and natural gas (37% combined).

Figure 2 / The electricity mix in Visegrád countries, Austria and EU27, 2020



Source: IEA (2022)

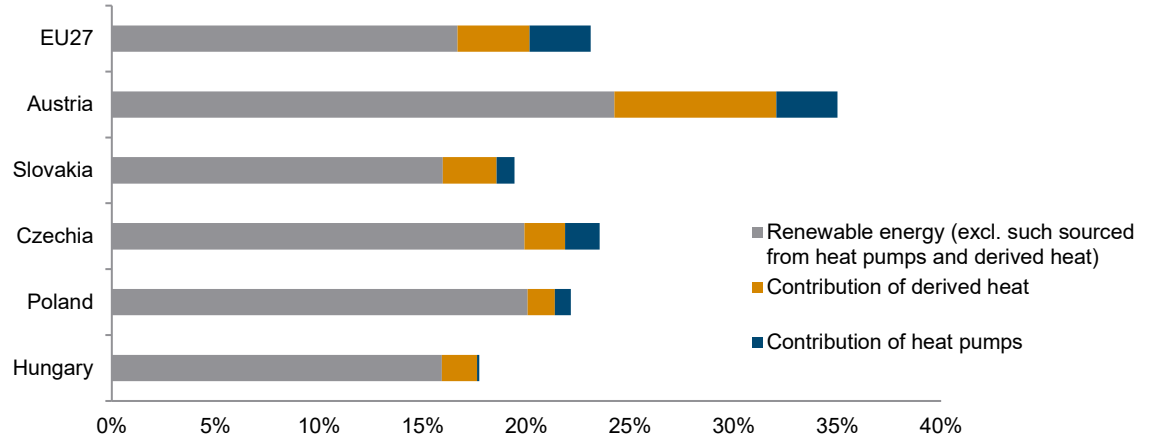
Looking at Figure 2, what is apparent (and distinct from Austria) is that much more than renewables, the Visegrád group's decarbonisation efforts are rooted in nuclear energy as a cheap and reliable alternative to reducing carbon emissions. Building on historical legacy, in Slovakia and Hungary, one half of energy for electricity stems from the atom, while Czechia aims to extend its nuclear share to a similar scale in the long term. Poland currently has no nuclear energy, but has also announced the construction of its first power plant before 2030 (Kochanek, 2021).

Building sector

The second major energy consumer is the building sector: about half of Europe's final energy consumption stems from heating and cooling buildings in industrial and residential areas. Renewable energy used to heat and cool buildings can also include derived heat and energy captured from the air, the ground and water by heat pumps (Eurostat, 2020). Figure 3 gives an overview of the share of renewable energy used for heating and cooling in the Visegrád countries, Austria and the EU27 in 2020, highlighting the contributions made by the above-mentioned heat capturing technologies. With 35%, Austria is again leading the way, especially with regard to implementing new, innovative green technologies of heat pumps and derived heat, which contributed over 30% of the energy from renewable sources used for heating and cooling. By contrast, around one quarter of all the energy used for heating and cooling originated from renewable energy sources at the EU level.

Figure 3 / Share of renewable energy in heating & cooling of buildings in Visegrád countries, Austria and EU27 in 2020

(% of gross final energy consumption for heating and cooling)



Source: Eurostat.

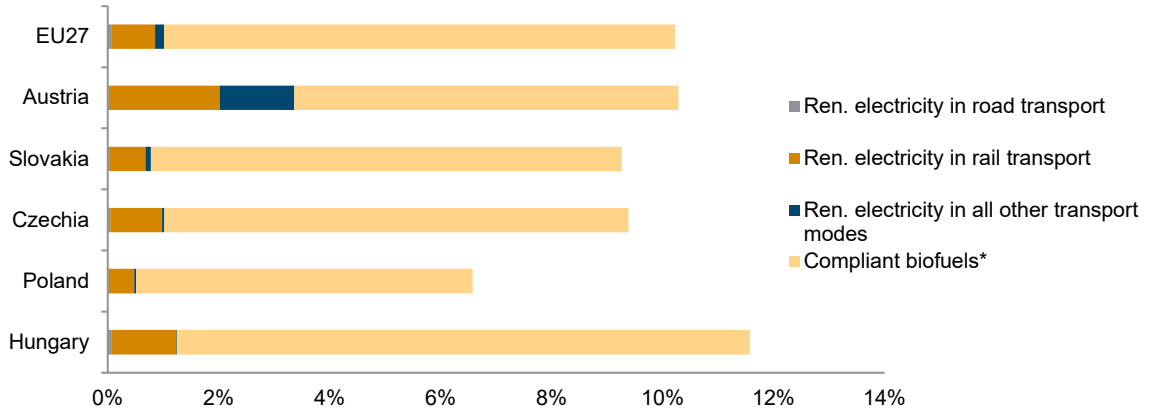
The Visegrád countries are doing quite well in the greening of the building sector, having almost reached the EU average level in 2020. This solid catch-up can be attributed to national funding schemes that incentivise energy-efficient retrofitting and construction of buildings. Czechia's recent progress can be linked to the 'Green Savings Programme', which gives citizens access to funding schemes for renovation as well as efficient construction. Likewise, with the introduction of a country-wide scheme, Poland is targeting the exchange of coal-fired boilers and thermal insulation of buildings. Slovakia has also made major progress in greening its buildings over the past 20 years by increasing energy efficiency and

expanding the share of renewables used by households. Around 60% of all apartment housing has now been insulated, and at this rate, all apartments could be anticipated to be insulated by 2030 (Heilmann et al., 2020). Moreover, with the 'Greenery for Households' programme, the Slovak government has incentivised the production of heat and electricity from small, household renewable energy systems (Kochanek, 2021). In a similar manner, Hungary developed the 'Warmth of Home' programme to support efficiency measures in private buildings. However, as can be seen, Hungary's share of renewables in the building sector falls behind its peers, mostly due to its continued reliance on gas sources. Yet the modernisation of the building sector in all four Visegrád countries remains in its infancy, as green technologies like heat pumps or derived heat have barely been installed. Here, the EU Recovery and Resilience Facility, which includes investments to this end, can be anticipated to give some boost.

Transportation

Finally, the transportation sector is another key user of energy. There are significant challenges in greening this sector, as the use of renewables is very low across the EU. At first glance, the Visegrád group does not appear to be lagging behind in expanding the share of renewables in their transportation systems. Except for Poland, all countries have achieved shares of green energy similar to Austria and the EU overall. As Figure 4 shows, Hungary, in fact, even has the highest share of renewables in transportation among the investigated countries. However, most of the green energy used for transportation in the Visegrád group (but also in the rest of the EU) stems from compliant biofuels. This is problematic as the critique on e-fuels is looming large due its low degree of energy efficiency. While an electric vehicle can translate 70-80% of consumed energy into motion, for biofuels it is only 10-15%. That's why researchers, including automobile lobbyists like Germany's ADAC and car producers like Volkswagen have turned away from biofuels, dismissing the idea of biofuels playing a major role in the green transition of the transport sector (ADAC, 2022). Disregarding compliant biofuels in Figure 4, the picture becomes bleaker, since the share of other types of renewable energy in transportation is very low, in the low single digits. This bears testimony to a problematic EU-wide political decision on betting on biofuels in the last decades instead of electrifying public transportation and railway systems.

Figure 4 / Share of renewable energy in transportation in Visegrád countries, Austria and EU27 in 2020



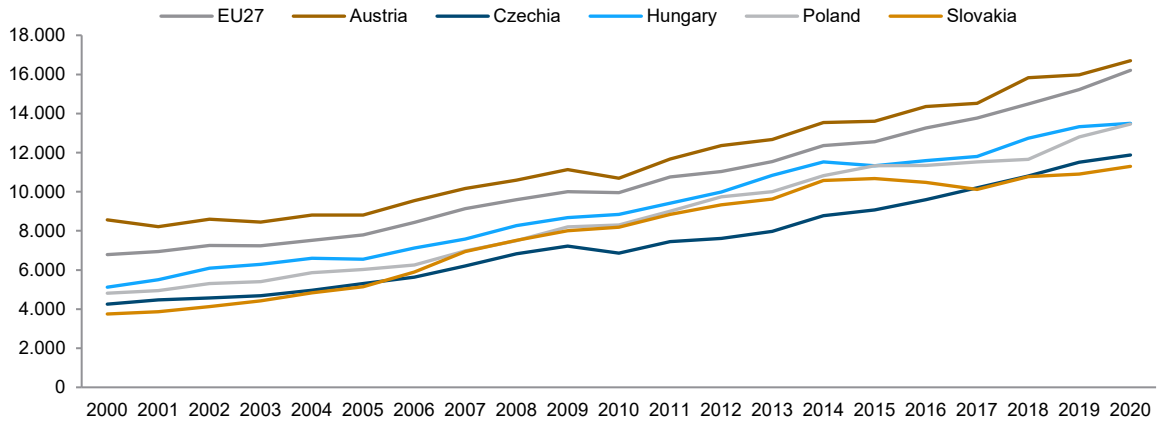
* Biofuels and bioliquids compliant with Article 17 and Article 18 of Directive 2009/28/EC.
Source: Eurostat.

Energy and material efficiency

Energy efficiency is another core parameter of the European Green Deal. As Figure 5 displays, all examined countries have accomplished substantial energy efficiency gains since 2000, although in recent years these gains have slowed down in Slovakia and Hungary. Moreover, all have been successful in achieving relative decoupling (i.e. their economic growth outpaced GHG emissions growth), and Austria, Czechia, Hungary and partially Slovakia even exhibit absolute decoupling (i.e. economic growth combined with GHG emissions shrinkage) over certain periods (Figure 6). It must be emphasised that the Visegrád economies were able to decouple their growth and emissions trajectories at lower income levels than Austria or the EU overall, which is a notable achievement.

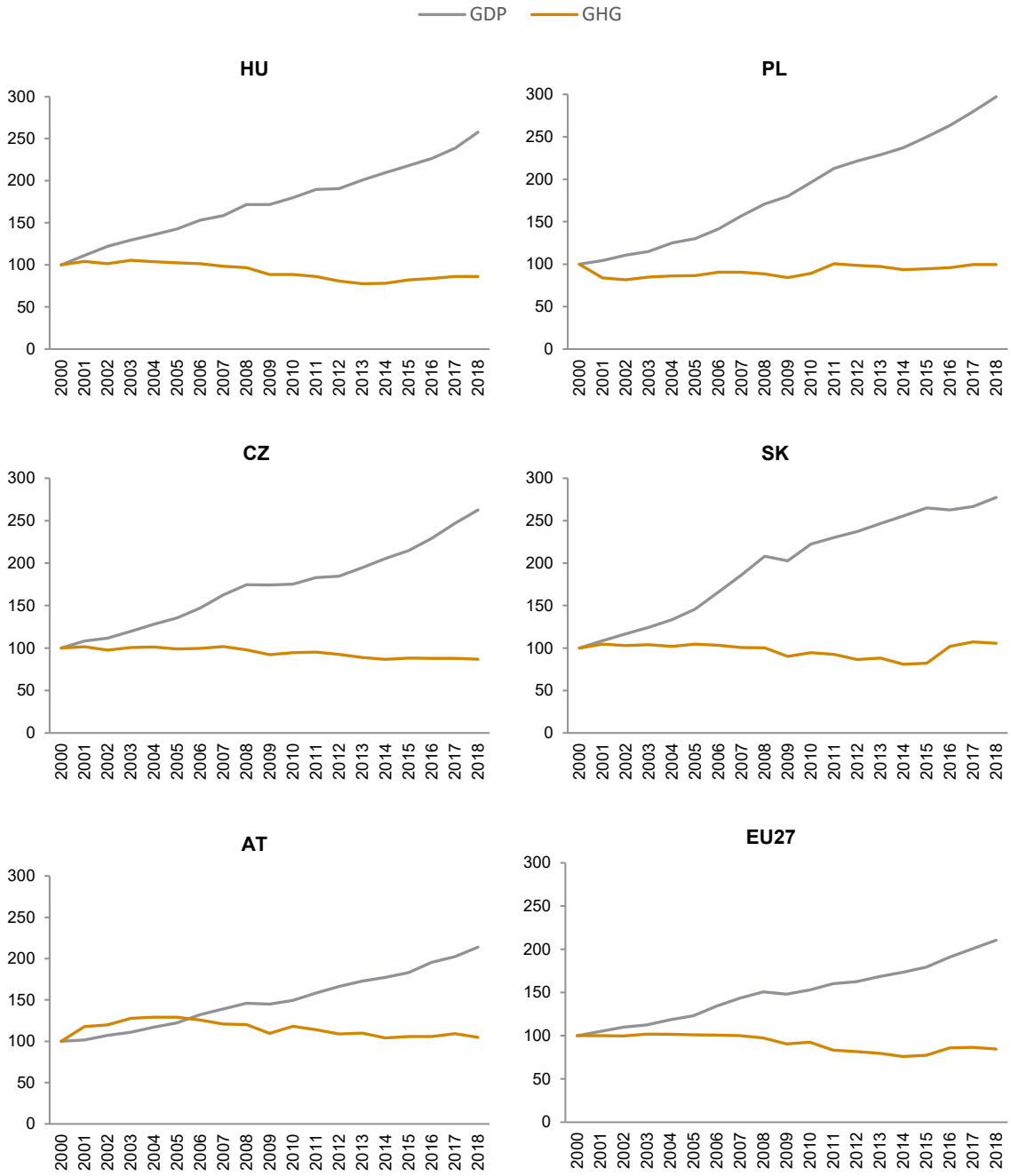
Yet as the literature on this topic highlights, it is highly contested whether these trends are occuring at a pace that aligns with climate objectives (Hickel & Kallis, 2020; Lenaerts et al., 2021). At the same time, one can observe a slight diversion between the energy efficiency levels in the EU overall and selected Visegrád countries: in Slovakia and Poland in particular, there appears to be a slowdown in the growth of energy efficiency in recent years (see Figure 5). Moreover, as shown by Römisch (2022), many NUTS regions of the Visegrád countries are still among the most carbon-intensive in all of the EU, while the regions of Austria belong to the least CO_2-intensive.

Figure 5 / Energy efficiency (EUR/toe) in Visegrád countries, Austria and the EU27 from 2010 to 2020



Note: Measured using GDP at current prices (PPP) divided by primary energy consumption.
Source: Eurostat and World Bank.

Figure 6 / Real GDP and GHG emissions decoupling in the Visegrád countries, Austria and the EU27 (2000=100)

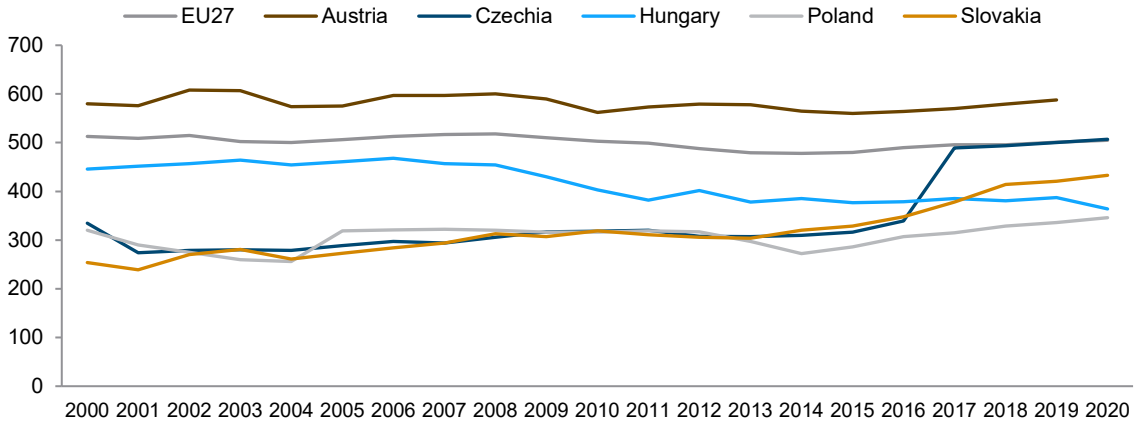


Note: GDP= real GDP; GHG= greenhouse gas emissions.
Source: Eurostat, World Bank and Our World in Data.

Circular economy

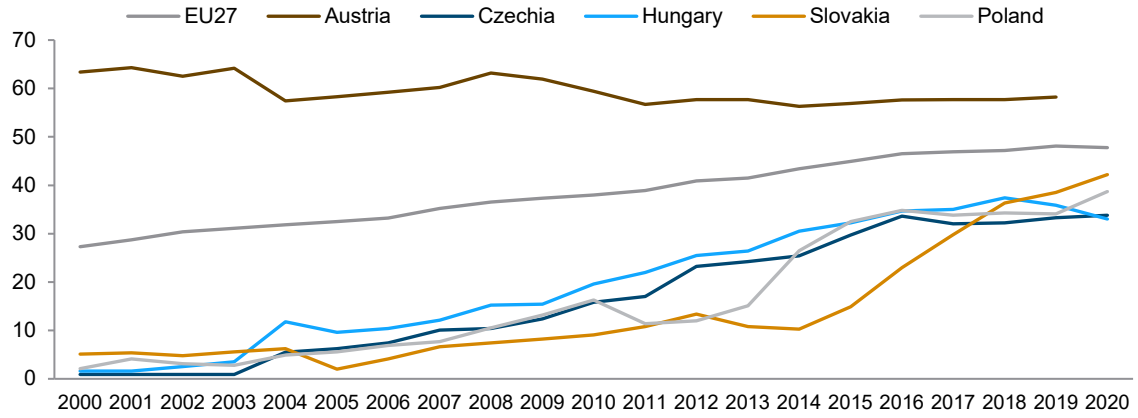
The new circular economy action plan (CEAP) endorsed by the European Commission in March 2020 is one of the cornerstones of the European Green Deal. It aims to provide a new plan to transition to a circular economy 'where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised' (European Commission, 2015, p. 1).

Figure 7 / Municipal waste generation (kg/capita) in the Visegrád countries, Austria and EU27 from 2000 to 2020



Note: Break in time series in Czechia between 2016 and 2017.
Source: Eurostat.

Figure 8 / Municipal recycling rate in % in the Visegrád countries, Austria and the EU27 from 2000 to 2020



Source: Eurostat.

Visegrád countries tend to generate notably less municipal waste per capita than the EU average (Figure 7), which can be intuitively explained by the smaller purchasing power of Visegrád countries given their lower development levels. Yet at the same time, as Figure 8 reveals, the recycling rate paints a mirror image. Austria has the highest recycling rate of municipal waste among the investigated

countries, partially compensating for the additional amounts of waste it creates. At the same time, it must be emphasised that the Visegrád countries have made remarkable progress in boosting their recycling rates in the past two decades, from virtually zero to levels almost reaching the EU average. By contrast, the recycling rate in Austria appears to have already reached a limit in the early 2000's. Still, improvements in the circular economy represent the greatest priority area especially for Czechia, as it generates high amounts of municipal waste per capita on the one hand, and recycles only a fraction of it on the other hand.

3. KEY CHALLENGES HINDERING THE GREEN TRANSITION

Despite all the positive steps made toward a greener economy, the Visegrád countries continue to fall behind EU peers (and behind Austria in particular) across numerous important dimensions of the green transition, as the previous section has highlighted. Hence, for Visegrád economies to successfully converge on the path to climate neutrality, understanding and addressing the major challenges hindering its expansion of green technologies is deemed an important pre-requisite. At the same time, a better understanding of the unique obstacles faced by the Visegrád countries is useful for EU policymakers to be able to lead a conducive climate dialogue despite the prevailing cross-country differences in the progress made thus far. In this regard, we identify five main problem areas, discussed now in turn.

Low starting point

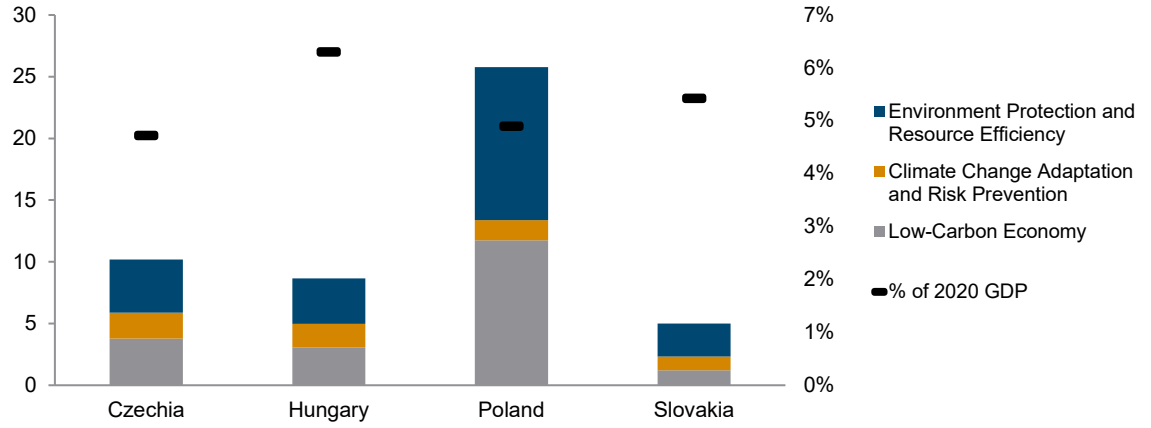
As one would expect, industrialisation generally coincides with an increase in an economy's environmental footprint, as more wealth triggers more consumption and propels production, resource extraction and greenhouse gas emissions. At the same time, there is a strong relationship between levels of economic development (measured by GDP per capita) and the advancement in the green transition (measured by CO_2 intensity), and hence less advanced economies face the dual challenge of economic and environmental convergence (Römisch, 2022). In this light, it is simply more difficult for Visegrád countries to reduce their emissions while still on the convergence path, as their catch-up may appear at odds with climate goals. Moreover, it must be recognised that the Visegrád countries inherited their high dependency on nuclear and fossil energy, as well as an energy inefficient building stock, from the communist era. By contrast, 23% of energy produced in Austria already came from renewable sources as early as 2004 – five times more than in Hungary at that time.

Therefore, closing this gap across EU members is a question of cohesion and requires extensive financial capacities and adequate technical skills to build up supporting industries. As one might expect, the Visegrád countries fall short on both counts. EU funds aim to take these deficiencies into account, and can be viewed as the primary driver of the green transition in the Visegrád countries. In particular, the European Regional Development Fund (ERDF) and the Cohesion Fund (CF) have served as powerful financial vehicles to support the above-discussed progress in recent years, allocating over EUR 49bn to investments with environmental objectives in the four countries over the 2014-2020 programming period. As Figure 9 shows, Poland has received the most sizable inflows in absolute terms, but all countries benefited roughly equally in relation to the size of their economies. Given that one third of the total upcoming EU budget is planned to be devoted to fighting climate change, and that the Recovery and Resilience Facility makes it a condition to allocate at least 37% of national recovery plans to climate objectives (European Commission, 2022a), the green investment needs of the Visegrád

countries will continue to be helped predominantly by the EU budget. In this sense, reaching an agreement in the ongoing standoff between the EU and Hungary and Poland over the rule of law deficiencies should be a critical priority for these countries, as without the financial support, it is highly unlikely that they will successfully achieve the necessary climate targets.

Figure 9 / Allocations from European Structural and Investment Funds to the Visegrád countries by investment purpose in 2014 – 2020

(in bn EUR (primary axis) and as % of 2020 GDP (secondary axis))



Source: European Commission Cohesion Data.

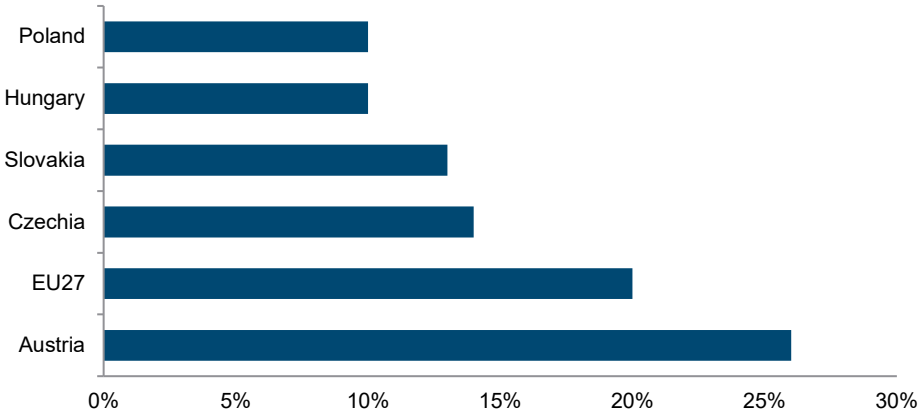
Lower societal recognition and political priority of the climate crisis

A related challenge that the Visegrád countries face is the weaker societal recognition of climate change compared to the EU average, and compared to Austria especially (see Figure 10). With fossil fuel-powered industrialisation traditionally pursued on the convergence path, mitigation policies have often been framed as ill-suited for less developed economies (Wurzel et al., 2018; Olšáková, 2019)). As a result, climate objectives have not had the chance to enter the public discourse in the Visegrád countries as prominently as in the more developed parts of the EU, with other issues of socio-economic relevance, including the cost of living or social security taking precedence (European Commission, 2019). Therefore, boosting public perceptions of the climate crisis is of high importance in the region in order to achieve positive change toward sustainable development. In this regard, well-targeted information campaigns can be of particular importance.

In turn, lower public interest manifests itself in the less prominent standing of green issues on the political agenda of the Visegrád countries. Indeed, Visegrád governments have at times even implemented policies at odds with the green transition. For instance, the Polish government put forward a restrictive law in 2016 that prohibits developing onshore wind power generation. In Hungary, there is a similar backlash against wind energy, as Hungary's recent National Energy and Climate Plan (NECP) even envisages the complete phase-out of wind power generation by 2030 (Heilmann et al., 2020). Institutional shortcomings further add to the issue, as the unstable policy environment causes insecurity among investors and contributes to underinvestment in renewable energy. In this way, the development of wind energy was stalled in 2009 in Slovakia, when investors were unable to obtain permission from

the network operator to join it. In Czechia, alleged corruption scandals caused a public backlash resulting in the abolishment of feed-in tariffs for renewables in 2013 (Kochanek, 2021).

Figure 10 / Share of respondents choosing environmental, climate and energy issues as the most important problem for the country at the moment



Source: Eurobarometer 91- European Commission (2019).

The role of the automobile industry

A crucial component of the European Green Deal is the phasing-out of combustion engine vehicles. For Visegrád economies, this implies a notable shift in business-as-usual, as automotive production lies at the heart of the region's industrial core. As Table 1 shows, with almost three million vehicles produced in a year, the four economies together account for roughly a quarter of all the automobiles produced in the EU. The leading role that the automotive sector plays in employment, manufacturing exports, as well as in industrial production, makes the EU decision to halt the sale of new vehicles with a combustion engine by 2035 a particular sore point for the Visegrád economies (Ainger and Krukowska, 2022).

Table 1 / Number of passenger vehicles produced by country, 2021

	Vehicles produced	% share of EU27
Czechia	1,111,432	9.1%
Slovakia	1,000,000	8.2%
Poland	439,421	3.6%
Hungary	394,302	3.2%
Visegrád countries total	2,945,155	24.2%

Source: OICA.

In order for the Visegrád economies to maintain the competitiveness of their automotive industries, a shift towards electric vehicles inevitably lies ahead. Comparable in its potentially disruptive power to the shift 'from horse to car', mass adoption of electric mobility entails significant changes in the production process (Campbell and Miller, 2021). Hence, assuming a direct application of the Visegrád countries' competitive advantage in traditional engine vehicles to electric ones would be naïve. Not only is the production process of an electric vehicle less labour-intensive and more software-intensive, but around

60% of material inputs that go into the production of an electric vehicle lie outside the supply chains of present combustion engine vehicles (Grieveson et al., 2021). Moreover, battery production remains largely outside the domain of EU countries, implying a greater need for imports of critical inputs in the production process (ibid.). The differences in supply chains also threaten the continued success of the network of suppliers in the Visegrád countries that have largely produced for internal combustion (Heilmann et al., 2020).

Focussing on the largest automotive producer per capita in the world, Slovakia, production of electric vehicles remains modest at present, suggesting the transition is off to a relatively slow start. There are certain hybrid and electric models being assembled by automakers Volkswagen, Kia and Peugeot Citroen, but CO2-heavy sports utility vehicles still tend to dominate in the Slovak production plants over sustainable options (Grieveson et al., 2021). However, recent developments suggest signs of the automotive sector adapting to changing operating conditions, again led by foreign investors. In April 2022, Volkswagen announced plans to produce li-ion batteries in the country, which will present crucial inputs to the electric vehicles of the company's Porsche brand (Žuffa, 2022). Likewise, the Dutch automaker Stellantis has opted to produce a segment of its electric vehicles in Trnava, Slovakia (PSA Europe, 2021). Moreover, the Swedish automaker Volvo is also notably expanding Slovakia's capacities in e-vehicles, given its recent EUR 1.2bn investment to produce purely electric vehicles in Košice, Slovakia (SARIO, 2022).

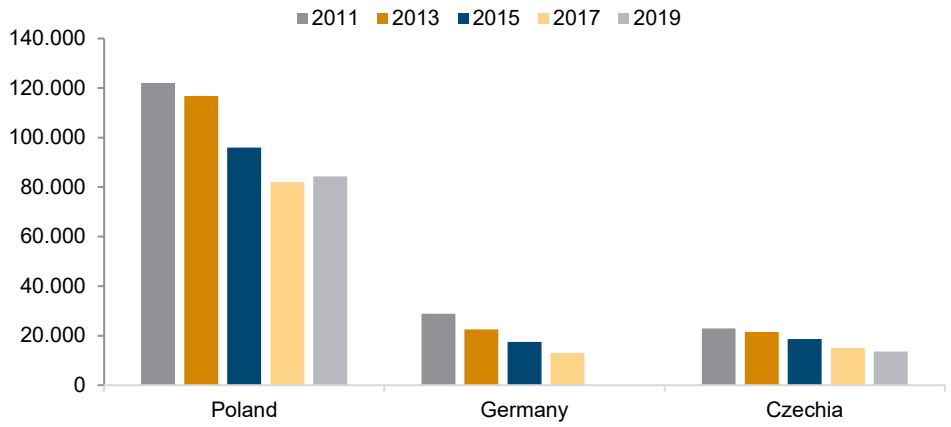
The fear of social fallout in mining regions

Another significant obstacle to the green transition lies in the fact that the coal sector is very important in several Visegrád countries. Higher shares of electricity produced from coal (as was shown in Figure 2) directly translate into higher numbers of people employed in hard coal and lignite plants. In addition, sectors providing services for these mines and power plants are estimated to employ four times as many workers (Kochanek, 2021). Hence, the transition to renewable energy comes with a greater risk of social fallout in these countries, especially since coal is regarded as the most emissions-intensive energy source, and thus holds a central place in the EU's decarbonisation strategy (Maucorps, 2022). While coal-reliant employment can be found in various parts of the EU including Germany, Poland, Czechia, Slovakia, Hungary, Romania and Bulgaria (Maucorps, 2022), the issue represents a particular sore point for Poland and Czechia. Coal mining workers from these two countries alone constitute roughly 80% of total EU coal mining employment (with workers from Germany accounting for much of the rest). As Figure 11 depicts, solid advances have been made in these countries in gradually diverting the labour force from the coal mines to other sectors over the past decade. However, Poland—the heaviest coal miner in the EU—has again regained some of the lost labour force between 2017 and 2019.

Undoubtedly, managing the green transition in the light of such high exposure requires particularly strong and well-implemented social policies. If well managed, a shift to renewable energy might hold the potential to create more jobs in these regions than would be lost by the coal phase-out, opening up the possibility of a positive sum outcome. The reasoning behind this is that the value chains for renewable energy and sustainable technologies are argued to require more labour input than the extraction of fossil fuels (Wegrazyn et al., 2022; Ram et al., 2022). That being said, the switch to clean technologies is particularly difficult in the Central and Eastern European coal regions due to geographical constraints (Maucorps, 2022; European Commission 2020). Hence, in line with the Green Deal's central mission of

'leaving no person or place behind' (European Commission, 2019), retraining and reskilling of workers, as well as providing a safety net in the transition process, stand out as particularly crucial in the Visegrád countries and ought to take a more central place in policy debates.

Figure 11 / Number of employees in coal and lignite mines



Note: 2019 data for Germany not reported in the dataset.
Source: Eurostat.

Czechia and Slovakia have progressed in their efforts by developing national strategies for the coal regions. The Czech Coal Commission has set the target to phase out coal by 2023 and is responsible for identifying support measures for the affected regions. Moreover, the government has provided a strategic framework for the economic development of the country's three mining regions (the RE:START programme). Slovakia committed to phase out coal by 2023, and has published an action plan that aims to cushion the socioeconomic consequences for the country's main lignite mining region, Upper Nitra. The development of these national transition strategies has received political support from the EU, and these areas were included as pilot regions in the EU's Coal Regions in Transition Platform. Despite being the EU country with by far the largest workforce in the coal sector, Poland has so far lagged behind its peers in communicating a national strategy for a coal-free future. In late 2021, the Polish government released a national framework for the energy transition until 2040, labelled the PEP2040. It sets out support for local initiatives to pursue the green energy transition, as well as coordinating with the EU's Coal Platform (Polish Ministry of Climate and Environment, 2022). Yet given that the implementation of the framework is still very much in its infancy, the efficacy of the strategy remains to be seen.

A pressing challenge: the risk of fossil-fuel backsliding to decouple from Russia

The Russian war against Ukraine has pushed the issue of energy security to the top of the EU policy agenda. The pre-war exposure to Russian energy varied in magnitude across the bloc, and there are also differences across various estimates one refers to. In any case, the landlocked Visegrád countries generally stand out as the most vulnerable in their energy structures: Di Bella et al. (2022) show that Slovakia, Hungary, as well as Czechia are particularly exposed to Russian energy imports, driven by their heavy reliance on natural gas sourced virtually exclusively from Russia. Should there be a full switch-off of Russian gas imports, these countries risk shortages of up to 40% of their gas consumption

(ibid.). While somewhat less vulnerable, Austria, Germany and Italy also share the challenge of decoupling from their heavy reliance on Russian gas imports (Di Bella et al., 2022). In addition, Slovakia imported all of its crude oil from Russia before the Russian invasion. By contrast, Poland is somewhat less exposed, given the above-discussed usage of domestic coal.

The need for a swift and uncompromising reconfiguration of the EU energy system is apparent, and the European Commission's REPowerEU plan seeks to achieve decoupling from Russian fossil fuels by accelerating the green transition (European Commission, 2022b). Hence, this political momentum has the potential to scale up investment in renewable energy sources and sustainable solutions also in the Visegrád countries, as they rush to decouple from Russia. There are already some signs in this direction, as for instance households' interest in installing efficiency-increasing heat pumps, which has seen a surge in demand this year in Czechia amidst rising energy prices (Palata, 2022). Moreover, to diversify away from its current energy dependence, Visegrád policymakers are skewing towards expansion of nuclear energy capacities, fully utilising existing infrastructure as well as building new reactors (ibid.). Likewise, despite its long hesitance in the past, Poland has now also turned to the installation of its first offshore windfarm (Hancock, 2022).

However, the complexities involved in energy decoupling from Russia amidst surging prices may also lead to backsliding. The temptation to put climate considerations in the background and rescale back the capacities in locally extracted fossil fuels is clearly strong at the moment, and may make the goals of the Green Deal out of reach within the stipulated timeline (Maucorps, 2022). Among other countries, Czechia and Germany have both resorted to an increase in capacities of their coal power stations (Hancock, 2022). While such measures are being framed as only temporary, they place all the progress in green transition achieved so far at risk. A key lesson to be learned is that renewable resources represent not only a sustainable source of energy, but also a path forward to becoming energy-independent from authoritarian regimes. Addressing the current energy crisis by exacerbating the long-term crisis that climate change represents would be short-sighted thinking.

4. POLICY RECOMMENDATIONS: DEEPENING COOPERATION BETWEEN AUSTRIA AND THE VISEGRÁD COUNTRIES IN THE GREEN TRANSITION

Considering the associated positive externalities and the above-discussed challenges, solidarity in the green transition across Member States is critical for achieving the ambitious climate targets set by the EU. Austria, due to its deep integration with the Central European economies and its advanced position on the transition pathway, can play a significant role in supporting the Visegrád countries in accomplishing the green transformation. The following measures outline some of the key areas in which Austria can lend a supporting hand to its neighbours in reaching climate neutrality by the stipulated timeline.

Develop cross-country projects for green electricity. Austria should promote investments in renewable energy technologies where it has strong capabilities and expertise beyond its own borders, to span the Visegrád group. Even though a high share of nuclear in the energy mix provides low GHG emission intensity of electricity production, an increase in the share of renewables can result in additional economic benefits, job creation and reduction of energy poverty, which can have positive spills-over effects back to Austria. In particular, Austria can target investment in technologies for hydropower in Hungary, biomass in Poland, and wind in Slovakia and Czechia, as they presently fall below 1% of the electricity production, and

hence represent highly underdeveloped areas. Moreover, Austria can strengthen collaboration and trade with the Visegrád countries to establish regional energy security platforms that ensure energy supply from renewables and that are devoid of Russian fossil energy. In this regard, Austria can consider similar regional renewable energy associations like the VISEGRAD+ for Renewable Energy, which would allow for closer collaboration in matters related to the energy transition.

Re-launch the greening process of the building and transportation sector. Despite having made substantial progress in the modernisation of the building sector in recent years, the Visegrád countries have put too little emphasis on the development of new technologies like derived heat or heat pumps. Here, Austria as a technological leader in the EU can leverage its position: Austrian firms, which hold the necessary know-how, could partake in energy efficiency improvement projects in the wider region, especially if an incentive scheme could be created through potential cooperation with EU institutions or development banks. This is especially relevant for the Visegrád countries, as they suffer from a shortage of firms that have the capabilities to carry out state-of-the-art thermal insulation of buildings (Palata, 2022). With regard to the transport sector, investment efforts must be stepped up in the electrification of road transportation and rail network. In this area, Austria could potentially take on the role of a technology distributor or a financial backer.

Support cross-country research collaboration in green technologies. Austria can further deepen its engagement with the Visegrád countries by forming international research consortia and expanding research exchange programmes focussed on green issues. There are important advances to be made in the area of storage technologies, for instance, which present a major technical obstacle to the wider penetration of renewables today (e.g. Aghahosseini et al., 2019; Child et al., 2018; Krajačić et al., 2011). In this way, the aim would be to strengthen basic research on environmental issues in Central Europe, facilitate knowledge exchange, and in turn motivate the adoption of state-of-the-art technologies in the wider region.

Take advantage of the momentum towards renewables created by the Russian invasion of Ukraine. Public perception and support of climate mitigation measures plays a fundamental role in a government's pursuit of a green transition. As we highlighted above, the societal recognition of the climate crisis is weaker in the Visegrád countries than in some other parts of Europe, making public information campaigns and stakeholder engagement particularly important. In this regard, the Visegrád countries and Austria should together steer the debate on energy decoupling toward renewables, emphasising the expansion of green energy as a powerful political tool to ensure energy independence and security.

REFERENCES

ADAC. (2022). Synthetische Kraftstoffe—Sind E-Fuels die Zukunft? https://www.adac.de/verkehr/tanken-kraftstoff-antrieb/alternative-antriebe/synthetische-kraftstoffe/

Aghahosseini, A., Bogdanov, D., Barbosa, L. S. N. S., & Breyer, C. (2019). Analysing the feasibility of powering the Americas with renewable energy and inter-regional grid interconnections by 2030. Renewable and Sustainable Energy Reviews, 105, 187–205. https://doi.org/10.1016/j.rser.2019.01.046

Ainger, J., & Krukowska, E. (2022). EU Gets Landmark Deal to Phase Out Combustion Engine by 2035. *Bloomberg*. 29 June 2022. Retrieved from https://www.bloomberg.com/news/articles/2022-06-29/eu-countries-uphold-phaseout-of-emissions-from-new-cars-by-2035

Campbell, P., & Miller, J. (2021). Electric vehicles: the revolution is finally here. *Financial Times*. 4 October 2021. Retrieved from https://www.ft.com/content/fb4d1d64-5d90-4e27-b77f-6e221bc02696

Child, M., Bogdanov, D., & Breyer, C. (2018). The role of storage technologies for the transition to a 100% renewable energy system in Europe. Energy Procedia, 155, 44–60. https://doi.org/10.1016/j.egypro.2018.11.067

Di Bella, G., Flanagan, M. J., Foda, K., Maslova, S., Pienkowski, A., Stuermer, M., & Toscani, F. G. (2022). Natural gas in Europe: the potential impact of disruptions to supply. *IMF Working Papers*, *2022*(145).

European Commission. (2015). Closing the loop—An EU action plan for the Circular Economy. EU Commission. https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF

European Commission. (2019). Standard Eurobarometer 91—Spring 2019. https://europa.eu/eurobarometer/surveys/detail/2253

EU Commission. (2019). Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal. European Commission.

European Commission (Joint Research Centre) (2020), *Clean Energy Technologies in Coal Regions: Opportunities for jobs and growth – deployment potential and impacts* (EUR 29895 EN). Luxembourg: Publications Office of the European Union.

European Commission. (2022a). Recovery and Resilience Facility. [online]. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en#the-recovery-and-resilience-facility

European Commission. (2022b). *REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition*. 18 May 2022. Retrieved from https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131

Eurostat. (2020). *Renewable energy for heating and cooling*. 11 February 2020. Retrieved from: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200211-1

Gosling, T. (2022). Electric cars spell trouble for Central Europe. *Politico*. 20 May 2022. Retrieved from https://www.politico.eu/article/central-europe-struggle-keep-up-electric-car-race/

Hancock, A. (2022). Europe's new dirty energy: the 'unavoidable evil' of wartime fossil fuels. *Financial Times*. 6 September 2022. Retrieved from https://www.ft.com/content/b209933f-df7f-49ae-8f82-edc32ed622a6

Heilmann, F., Popp, R., & Ámon, A. (2020). The Political Economy of Energy in Central and Eastern Europe: Supporting the Net Zero Transition. E3G. https://www.euki.de/wp-content/uploads/2020/02/E3G_2020_Comparative_Analysis_CEE.pdf

Hickel, J., & Kallis, G. (2020). Is Green Growth Possible? New Political Economy, 25(4), 469–486. https://doi.org/10.1080/13563467.2019.1598964

Kochanek, E. (2019). Regional cooperation on gas security in Central Europe. Polityka Energetyczna – Energy Policy Journal, 22(1), 19–38. https://doi.org/10.33223/epj/103667

Kochanek, E. (2021). The Energy Transition in the Visegrad Group Countries. Energies, 14(8), 2212. https://doi.org/10.3390/en14082212

Krajačić, G., Duić, N., Zmijarević, Z., Mathiesen, B. V., Vučinić, A. A., & da Graça Carvalho, M. (2011). Planning for a 100% independent energy system based on smart energy storage for integration of renewables and CO2 emissions reduction. Applied Thermal Engineering, 31(13), 2073–2083. https://doi.org/10.1016/j.applthermaleng.2011.03.014

Lenaerts, K., Tagliapietra, S., & Wolff, G. B. (2021). Can climate change be tackled without ditching economic growth? Bruegel. https://www.bruegel.org/wp-content/uploads/2021/09/WP-2021-10-160921-1.pdf

Maucorps, A. (2022). 'Phasing out coal? A challenge to European territorial cohesion in times of energy crisis', in: Vasily Astrov (eds), Monthly Report No. 09/2022, *wiiw Monthly Report*, No. 9, Vienna, September 2022, pp. 18-22

Moody's (2022). *Tight supply will keep European power prices high as governments intervene.* November 16, 2022. Paris. https://www.moodys.com/research/Moodys-Tight-supply-will-keep-European-power-prices-high-as--PBC_1349271

Olšáková, D. (Ed.). (2019). In the name of the great work: Stalin's plan for the transformation of nature and its impact in Eastern Europe (First paperback edition). Berghahn Books.

Palata, L. (2022). Russian gas imports: Czech Republic and Slovakia scramble for alternatives. *DW*. 27 May 2022. Retrieved from https://www.dw.com/en/russian-gas-imports-czech-republic-and-slovakia-scramble-for-alternatives/a-61943751?utm_source=POLITICO.EU&utm_campaign=4a06afd488-EMAIL_CAMPAIGN_2022_08_05_02_40&utm_medium=email&utm_term=0_10959edeb5-4a06afd488-189549501

Polish Ministry of Climate and Environment. (2022). Energy Policy of Poland until 2040 (PEP2040. https://www.gov.pl/web/climate/energy-policy-of-poland-until-2040-epp2040

PSA Europe. (2022). *Trnavská automobilka Stellantis Slovakia získala investíciu do nového výrobného programu*. Retrieved from http://www.psa-slovakia.sk/novinky-1/kratke-spravy/trnavska-automobilka-stellantis-slovakia-ziskala-investiciu-do-noveho-vyrobneho-programu.html?page_id=2990

Ram, M., Osorio-Aravena, J. C., Aghahosseini, A., Bogdanov, D., & Breyer, C. (2022). Job creation during a climate compliant global energy transition across the power, heat, transport, and desalination sectors by 2050. Energy, 238, 121690. https://doi.org/10.1016/j.energy.2021.121690

Römisch, R. (2022). 'Economic and environmental convergence in the EU', in: Vasily Astrov (eds), Monthly Report No. 09/2022, wiiw Monthly Report, No. 9, Vienna, September 2022, 12-17

SARIO. (2022). *Timeline of SARIO negotiations on the strategic investment of the Volvo Group 2021*. Retrieved from https://www.sario.sk/en/news/timeline-sario-negotiations-strategic-investment-volvo-group-2021

Visegradgroup.eu (2021). Joint Statement of the Prime Ministers of the Visegrád Group. 9 July 2021. Ljubljana, Slovenia. [online]. https://www.visegradgroup.eu/joint-statement-of-v4-210730.

Wegrazyn, A., Spirydowicz, A., & Grebski, W. (2022). Dilemmas of the energy transformation in Poland 2021/2022. Mining Machines, 1, 32–42. https://doi.org/10.32056/KOMAG2022.1.4

Wurzel, R., Connelly, J., & Liefferink, J. D. (Eds.). (2018). Poland's clash over. In The European Union in international climate change politics: Still taking a lead? (First issued in paperback). Routledge, Taylor & Francis Group.

Žuffa, R. (2022). Na Slovensko mieri dvestomiliónová investícia Porsche. Prinesie rozvoj elektromobility. *Trend*. 21 April 2022. Retrieved from https://www.trend.sk/biznis/slovensko-mieri-dvestomilionova-investicia-porsche-prinesie-rozvoj-elektromobility

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