



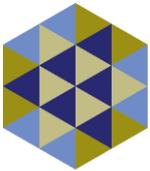
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# THE POLITICAL ECONOMY OF ENERGY IN CENTRAL AND EASTERN EUROPE SUPPORTING THE NET ZERO TRANSITION

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## EXECUTIVE SUMMARY

Central and Eastern European countries are often perceived as a uniform bloc opposing increased European climate action, such as the EU 2050 climate neutrality target. However, our report shows there are important differences in the state of the energy and climate transition in these countries - some are further ahead than others. The transition will likely be accelerated by the EU Commission's European Green Deal, which combines high levels of climate ambition with the offer to financially support the transition through the Just Transition Mechanism.

Although the phase out of coal remains a central challenge in Bulgaria, Czechia, Hungary, Poland, Romania and Slovakia, the countries reviewed in this report, the economic profitability of coal power is declining. Slovakia and Hungary were the first countries in the region to announce phase out dates. Coal will decline further while the costs of renewable energy are falling. Conditions for an increased role of renewables are thus improving, and some countries are slowly beginning to again invest in new renewable energy capacities.

In its current state, however, renewable energy infrastructure is not yet capable of replacing coal power generation. Negative past experiences with feed-in-tariffs associated with energy price increases resulted in unstable policy frameworks and stagnation at a low share of renewables in the electricity mix in most countries. At the same time, the six countries studied are planning to increase their gas and nuclear power generation capacities, which would lead to increased dependency on Russia as a supplier of technology, fuel and finance.

A further area with major potential for achieving emissions reductions is energy efficiency, as economies across the region are very energy intensive compared to the rest of the EU. Public support for better efficiency measures, as well as the wider energy transition, may be increased by worries over exceptionally high levels of air pollution caused by coal burning. More generally, public concern about climate change, while still low, has recently been increasing. New climate movements are raising their voices in the region.

We suggest measures that policy makers in the EU and other Member States can take to accelerate the transition in the region. With EU funds making up 40-60% of national public investment in all these countries, aligning climate objectives



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with support for the Just Transition is key. The impact of EU funds can be increased by providing direct support to regions and cities that have ambitious programmes for climate action in place.

Cross-border cooperation is an opportunity to develop large scale, high profile renewables projects, provided the EU supports improvements in regional and cross-national market integration as well as in electricity interconnections. This also requires ensuring EU energy network priorities are in line with climate neutrality and do not include fossil gas projects.

Member States more advanced in the energy transition could share experiences with less advanced countries on strengthening clean businesses, setting up the legal structures for phasing out coal and managing the transition in affected regions. This could include lessons on creating quality employment in the renewables sector.

Lastly, strengthening civil society organisations in Central and Eastern Europe will help facilitate Just Transition processes that suit local needs and attract increased attention to the energy transition at the domestic level.



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## INTRODUCTION

Especially in Western Europe, Central and Eastern European countries are often perceived as a uniform bloc that is opposing increased EU climate action, for example in the recent negotiations on the EU-wide target of achieving climate neutrality by 2050. Indeed, many countries in the region currently see fewer political, economic and social opportunities from the transition to climate neutrality and lack behind in implementing the climate and energy policies that would be required to meet European climate targets.

It would, however, be wrong to think that all Central and Eastern European countries share a common approach to climate and energy policy. For example, some countries in the region are taking significant steps towards an accelerated phase-out of coal power and have improved the investment environment for renewable energy. Slovakia is the first country of the region to become a member of the global Powering Past Coal Alliance (PPCA), after announcing to stop burning coal for electricity generation by 2023. Hungary has announced plans to phase out coal by 2030 and the Czech government has assembled a commission to advise on a possible coal phase-out. The Polish government is slowly beginning the expansion of solar and wind energy.

The European Green Deal is likely to accelerate the transition to climate neutrality of the entire region in the coming months and years. It combines high levels of climate ambition with the offer to financially support the transition through the Just Transition Mechanism. However, it is only a first step. To achieve a more ambitious EU climate position, and to ensure its implementation in all EU Member States, a nuanced understanding of the political dynamics of the transition to climate neutrality in Central and Eastern Europe is necessary. This is especially important in light of the upcoming negotiations on an increased climate target for 2030 and the new EU budget.

To this aim, this report compares the political economy of the energy transition between Bulgaria, Czechia, Hungary, Poland, Romania and Slovakia. It sets out the main commonalities and differences in order to support European and national policy makers in designing targeted political interventions that will accelerate the energy transition in the region.



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A well-managed and fast transition is also in the self-interest of Central and Eastern European countries. For example, coal power generation, on which many of them still rely, is increasingly becoming unprofitable. At the same time, renewable energy is becoming ever cheaper, a trend that is likely to further continue. Embarking on a managed transition away from fossil fuels towards renewable energy systems now is a way to avoid greater disruption in the future.

The analysis is based on the findings from in-depth analyses conducted in these six countries using E3G's Political Economy Mapping Methodology (PEMM). The report looks at selected aspects of these mappings, while in-depth analysis can be found in the previously published country reports.<sup>1</sup> Based on the comparative analysis, we give recommendations in three priority action areas for targeted political and diplomatic interventions by European and national policy makers.

*Figure 1: Scope of this report<sup>2</sup>*



<sup>1</sup> E3G's Political Economy Mappings for the six Eastern and Central European countries can be found [here](#). The high-level summary visualisations for all countries can also be found in the Annex.

<sup>2</sup> Created via mapchart.net



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# THE ENERGY TRANSITION IN CENTRAL AND EASTERN EUROPE

## Renewable energy: vast untapped potential

**There is great potential for expanding renewable energy capacities across Central and Eastern European countries, but it is not yet exploited because there is no commitment to a systemic renewable energy transition.<sup>3</sup>** In its assessment of their draft National Energy and Climate Plans (NECPs), the European Commission has criticized the renewable energy targets for 2030 of all the countries studied as being too low.<sup>4</sup> An accelerated expansion of renewable energy faces serious barriers as governments are sceptical towards renewable energy and often favour the expansion of centralized power generation such as nuclear power.

**A distinction needs to be made between renewable energy used for heating and renewable energy used for electricity production.** Renewable heating is encouraged by governments and its expansion is often pursued as the main strategy for meeting renewable energy targets. This happens primarily through an increased burning of biomass, including firewood, which is unsustainable as forests are an important carbon sink.<sup>5</sup> Electricity generation from renewable energy sources such as wind and solar PV is, on the other hand, facing significant opposition from governments and incumbent electricity producers who fear the associated changes to the electricity system.

**The policy framework for renewable electricity generation is subject to frequent changes in all countries.** In Bulgaria, Czechia, Romania and Slovakia, initial support frameworks in the late 2000s and early 2010s underestimated the pace of capacity additions that they would trigger. They caused increases in energy prices to which governments responded by abolishing the frameworks instead of improving their design. The hike in energy prices led to a negative

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<sup>3</sup> IRENA (2017). **Cost-competitive renewable power generation: Potential across South East Europe**

<sup>4</sup> All Member States must establish 10-year integrated National Energy and Climate Plans (NECPs) to show how they will meet the EU's energy and climate targets for 2030. The final plans needed to be submitted by 31 December 2019. As they were not published at the time of the release of this report, we rely on analysis of the **draft NECPs**.

<sup>5</sup> Sandbag (2019). **Playing with fire: An assessment of company plans to burn biomass in EU coal power stations**



public perception of renewable energy, and the retroactive abolishment of support schemes significantly undermined investor trust in the countries. The obstructive and unstable policy environment causes insecurity among investors and leads to a lack of investment in renewable energy. The “VISEGRAD+ for Renewable Energy” platform of regional renewable energy associations seeks to overcome these barriers by building regional coalitions for the clean energy transition.<sup>6</sup>

An additional problem is the **large share of hydro power and biomass** in the energy mix of Central and Eastern European countries. The prominent role of hydro power in the energy mix in Romania and Slovakia is debated domestically as planned hydro power projects lie within protected Natura 2000 areas, with potentially large environmental impacts.

**More recently, changes to policy frameworks have been implemented across the region to expand wind and solar capacities:** Bulgaria, Czechia, Hungary and Poland have introduced new small-scale support schemes for renewable energy and Poland is promoting investment in offshore wind projects and has held large auctions for solar and onshore wind.

*Figure 2: Share of renewable electricity generation of total generation by fuel (2017)*

	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia
Hydro	7.7%	3.5%	0.7%	1.9%	23.1%	16.7%
Solar	3.1%	2.5%	1.1%	0.0%	2.9%	1.8%
Wind	3.3%	0.7%	2.3%	8.7%	11.5%	0.0%
Biomass	0.9%	5.6%	6.0%	3.8%	0.8%	6.0%
<b>Total</b>	<b>15.0%</b>	<b>12.3%</b>	<b>10.1%</b>	<b>14.4%</b>	<b>38.3%</b>	<b>24.5%</b>

Source: International Energy Agency (2019). [Statistics](#)

<sup>6</sup> VISEGRAD+ for Renewable Energy (2019). [Memorandum of Understanding](#)



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## Country insights

### Bulgaria

Bulgaria generates 15% of its electricity from renewable sources, with hydropower being responsible for half of it (Figure 2). The country has recently increased its national target for renewable energy as a share of total energy consumption from 25% to 27% by 2030 but aims to achieve these targets mostly through burning biomass for heat.<sup>7</sup>

Until 2013, renewable energy capacities in Bulgaria experienced a strong expansion but have since stalled due to changes in the legislative framework. The main instrument for the promotion of renewable energy was a feed-in tariff which was generous and non-capped. However, the tariff was poorly managed and contributed to increases in electricity prices. Since 2012, Bulgaria's support system for renewables has undergone fundamental changes, leading to a de-facto moratorium on a further expansion of renewables in the electricity sector. The feed-in tariff was ultimately terminated in July 2018. Today, renewable energy producers have access to a premium tariff offsetting the difference between the market price and their long-term contracts with the National Electricity Company.<sup>8</sup>

### Czechia

Czechia generates 12% of its electricity from renewable sources (Figure 2). Following negotiations with the European Commission, the government has recently increased the target for renewables as a share of total energy consumption to 22% by 2030.

In 2005, the introduction of a feed-in tariff led to a rapid expansion of the Czech photovoltaic sector. The costs of the tariff increased dramatically when almost 2 GW of solar capacity were installed amid falling installation costs. The government's slow reaction to this development and the close ties of many tariff recipients to the government led to allegations of state capture and a public backlash against renewables.<sup>9</sup> Access to the feed-in tariff for new renewables

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<sup>7</sup> Euractiv (2019). **Three EU countries bump up renewable energy goal for 2030**; European Commission (2019). **Commission Recommendation**; CEE Bankwatch Network (2019). **Making the grade? A review of eight national energy and climate plans in central and eastern Europe**

<sup>8</sup> RES Legal (2019). **Bulgaria**

<sup>9</sup> Euractiv (2016). **Czech support for renewable energy in uncertain situation**



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installations was subsequently abolished in 2013 which led to a significant drop in renewable energy investments.<sup>10</sup>

Feed-in tariffs for some renewables were re-introduced in 2015, with a focus on small hydro and biomass in heating, and project subsidies for specific renewable energy technologies were established. However, policy signals are mixed. For example, a special “solar tax” of 10% is still levied on PV systems with an installed capacity of over 30 kW.<sup>11</sup>

## Hungary

Hungary generates 10% of its electricity from renewable sources, the lowest share among the countries studied (Figure 2). Hungary’s planned share of 20% renewables of total energy consumption by 2030 has been criticized by the European Commission for not fully reflecting Hungary’s potential for renewable energy.<sup>12</sup> A regulation prohibits the installation of wind turbines within a radius of 12 km around settlements, making new wind energy projects de facto impossible in the entire country. Hungary’s draft NECP even calculates with a complete phase-out of wind power generation by 2030.<sup>13</sup>

However, it has recently begun to support the expansion of solar PV through a feed-in premium, making the support operators receive dependent on the market price for electricity.<sup>14</sup> The initial experiences with the deployment of additional solar capacities have been positive. 2018 was a record year for solar deployment, with 410 MW of new capacity installed, a rate that will likely be kept over the coming years.<sup>15</sup>

## Poland

Poland generates 14% of its electricity through renewables with a large part coming from biomass co-fired in power stations (Figure 2). The European Commission has noted that the national goal of 21% renewables of total consumption by 2030 is below the required contribution of 25%, and Poland will

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<sup>10</sup> Czech Technicla University in Prague (2019). [Climate and energy investment map - Czechia](#)

<sup>11</sup> Euractiv (2017). [Pre-election Prague says solar power too expensive; Energy Transition \(2019\). The age of Czech solar power: after years of stagnation, is a rebirth imminent?](#)

<sup>12</sup> European Commission (2019). [Hungary: Summary of the Commission assessment of the draft National Energy and Climate Plan 2021-2030](#)

<sup>13</sup> Hungarian Government (2019). [National Energy and Climate Plan of Hungary \(Draft\)](#)

<sup>14</sup> REKK et al. (2018). [Beyond gas – energy security issues in the V4 after 2020](#)

<sup>15</sup> PV Magazine (2019). [Hungary deployed more than 400 MW of solar in 2018](#)



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likely miss the national target of 15% renewables in total consumption by 2020.<sup>16</sup> While the share of renewables grew between 2007 and 2015, it stalled afterwards due to new legal restrictions and uncertainty. Starting in 2016, developing onshore wind was made almost impossible by restrictive policies.<sup>17</sup>

The government has recently begun to support renewable energy in response to falling renewables costs, electricity demand that can no longer be satisfied by the dominant coal sector, more stringent EU climate policy and increasing domestic concerns about climate change. It announced to loosen onshore wind development restrictions and 2.2 GW in onshore wind projects were confirmed in recent auctions.<sup>18</sup> The government is supporting investments in offshore wind power, solar energy subsidies for small scale production by consumers are promoted on a national level and new subsidies for prosumers who produce power mainly for their own use have been introduced.<sup>19</sup> Together, these measures are planned to increase the current 8.5 GW of renewables capacity to 24 GW by 2030 and 37 GW by 2040.

### Romania

With 38% electricity generation from renewables, Romania has the highest share of renewable energy in the region (Figure 2). This is enabled by a large hydro sector, strong reliance on biomass for heating, and an investment boom that lasted until 2013 and led to the development of a large wind sector. The region of Southeast Dobrogea has the second-highest potential for wind generation of any region in Europe and is home to Europe's largest onshore windfarm.<sup>20</sup> Nonetheless, Romania's goal of achieving a 27.9% share of renewables in total energy consumption by 2030 is unambitious (the current share is 25%), and the European Commission recommended an increased goal of 34%.<sup>21</sup>

Initial investments into renewables were facilitated by a "Green Certificate Scheme", a quota scheme introduced in 2008. However, when renewable energy capacities grew much faster than expected, the scheme's market was distorted due to an influx of certificates. This development led to cutbacks in the scheme

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<sup>16</sup> European Commission (2019). **Poland: Summary of the Commission assessment of the draft National Energy and Climate Plan 2021-2030**

<sup>17</sup> Flanders Investment and Trade (2019). **Renewable Energy in Poland**

<sup>18</sup> Renewables Now (2019). **Poland auctions over 2.2 GW of new onshore wind capacity**

<sup>19</sup> Reuters (2019). **Poland hopes small producers will help it meet EU green energy goals**

<sup>20</sup> Cîrstea et al. (2018). **Current Situation and Future Perspectives of the Romanian Renewable Energy**

<sup>21</sup> Renewables Now (2019). **EC calls on Romania to raise renewable energy target to 34% by 2030**



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in 2013 and access for new renewables ended in 2016, causing major investment uncertainties. Today, no comprehensive support scheme for new renewables is in place, and there are only minor support programmes for small-scale installations.<sup>22</sup>

## Slovakia

At present, Slovakia has a renewable electricity share of 25%, largely thanks to hydropower and biomass (Figure 2). Its target of 19.2% renewables by 2030 has been criticized as too unambitious by the European Commission, calling for an increase to 24%.<sup>23</sup> The government is planning to meet its future renewable energy targets mostly through biomass. Its energy policy focuses on nuclear energy, which inhibits market reforms and grid upgrades that would be necessary to integrate more renewable energy sources into the electricity mix.

Slovakia's legislative framework for renewable energies has been subject to frequent changes, which have undermined investor confidence. A generous feed-in tariff for renewable electricity generation was introduced in 2009 but then cut back due to cost concerns. In 2018, the scheme was modified again. Today, renewable energies and combined heat and power (CHP) facilities have preferential access to distribution and transmission networks, feed-in tariffs for CHP facilities were established, and a feed-in premium, distributed via auctions, for renewable energy capacities with an installed capacity of over 500 kW was introduced.<sup>24</sup>

## Coal: a crumbling pillar of the energy mix

**Coal is still a major source of energy in most of the countries analysed although it plays a smaller role in the energy mix of Hungary, Slovakia and Romania.** In recent years, it has come under increasing economic, regulatory and social pressure in all countries. This is the effect of worsening economic conditions caused by low levels of productivity, increasing labour costs, the exhaustion of easily accessible resources and a rising carbon price in the EU's emissions trading system. In addition, high investments are required in order to modernise old coal infrastructure in line with stricter European environmental regulation.

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<sup>22</sup> RES Legal (2019). **Romania: Summary**

<sup>23</sup> European Commission (2019). **Slovakia: Summary of the Commission assessment of the draft National Energy and Climate Plan 2021-2030**

<sup>24</sup> CEE Legal Matters (2019). **Overhaul of the Slovak System for Support of Renewable Energy Sources**



Figure 3: The role of coal

	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	EU
Share of electricity generation (2016)	42.8%	53.6%	18.1%	79.8%	24.5%	12.1%	21%
Total jobs	14,500	21,600	2,500	112,500	18,600	2,700	238,000
Share of national workforce	0.41%	0.40%	0.03%	0.71%	0.23%	0.58%	/

Sources: International Energy Agency (2019). **Statistics**; European Commission (2018). **EU coal regions: Opportunities and challenges ahead**; Bruegel (2017). **Beyond Coal: Facilitating the Transition in Europe**

**However, the political importance of coal jobs, public concerns about energy prices and the lack of strategic planning on how to replace coal power discourage politicians in Central and Eastern Europe from driving a phase out forward.** While the number of jobs provided by the coal sector represent a small share of the national workforce, they matter at the regional level as they are highly concentrated. In all countries except Slovakia, ending coal production and use is further complicated by the fact that coal companies are state-owned, giving the government a strong incentive to support these companies.

**In the last year, some countries in the region accelerated their transition away from coal.** Slovakia announced in June 2019 that the country will stop burning coal to produce electricity by the end of 2023 and joined the international Powering Past Coal Alliance, which sets an international benchmark of 2030 as the latest coal phase-out date for OECD countries.<sup>25</sup> The Hungarian government announced to phase out coal by 2030 and the Czech government established a coal commission which is supposed to agree on a plan for phasing out coal by September 2020.

<sup>25</sup> Powering Past Coal Alliance (2017). **Declaration of the Powering Past Coal Alliance**. It needs to be noted that Bulgaria and Romania are not members of the Organisation for Economic Co-operation and Development (OECD).



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All countries studied plan to replace declining power generation from coal with increases in gas and nuclear capacity. However, acquiring funding for these projects will become more difficult as, for example, the revised lending policy of the European Investment Bank includes a far-reaching exclusion of gas projects after 2021 and will not finance new nuclear infrastructure.<sup>26</sup>

## Country insights

### Bulgaria

Bulgaria generates 43% of its electricity from coal (Figure 3), and the sector provides 14,500 jobs in total.<sup>27</sup> The Bulgarian power market is dominated by state-owned producers but ownership of coal assets is fragmented, making it more difficult to find a national solution for a coal phase-out.<sup>28</sup> The government actively tries to extend the lifetime of coal and supports the sector with high subsidies. There is no date and roadmap for a coal phase out and Bulgaria's draft National Energy and Climate Plan (NECP) does not foresee a reduction in coal capacity. Instead, analysis projects that installed coal capacity will remain at 4.7 GW in 2030.<sup>29</sup> Furthermore, the government is planning to construct a second nuclear power plant, but there are serious worries about its compliance with EU legislation.<sup>30</sup>

### Czechia

Czechia is very reliant on domestic coal to meet its energy needs. Coal makes up 54% of its electricity generation and the coal sector provides around 21,600 jobs (Figure 3). In the summer of 2019, the government established a commission tasked with advising the government on the coal phase out, with results expected by September 2020. The main risks to a successful commission result are potentially prohibitive compensation payments for coal plant and mine operators and the possible lock-in of a coal phase out pathway which does not go beyond a business as usual scenario.

Notably, the state-owned energy company ČEZ, which accounts for three fourth of electricity generation capacity, is already reorienting its business model away

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<sup>26</sup> EIB (2019). [EU Bank launches ambitious new climate strategy and Energy Lending Policy](#)

<sup>27</sup> European Commission (2018). [EU coal regions: Opportunities and challenges ahead](#)

<sup>28</sup> CEE Bankwatch Network (n.d.). [The energy sector in Bulgaria](#)

<sup>29</sup> CAN-E & Sandbag (2019). [Just Transition or just talk?](#)

<sup>30</sup> EURACTIV (2020). [Is Bulgaria's Belene nuclear plant in line with EU competition law?](#); RadioFreeEurope (2019). [Seven groups interested in funding Bulgaria nuclear project](#)



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from coal and plans to phase out 2 GW of coal capacity (out of 5.8 GW) until 2035, even though it does not have a fixed phase-out pathway.<sup>31</sup> It has also recently sold its 1 GW lignite plant Pocerady, but the plant will continue in operation.<sup>32</sup> The government foresees a switch from coal to nuclear, but efforts to embark on nuclear energy projects in the past years were unsuccessful.

### **Hungary**

Hungary generates 18% of its electricity from coal (Figure 3), and most of its coal-based electricity production comes from the 950 MW Mátra plant which was recently bought by the Hungarian state.<sup>33</sup> The coal sector provides only 2,500 jobs. In September 2019, President Áder announced that Hungary will phase out coal by 2030. As the licences of the Mátra plant would need an extension in 2025 and its economic prospects look dire, its closure might come even earlier than 2030. However, Áder's announcement has not yet been translated into legislation and is called into question by parts of the government. A core element of the Hungarian energy strategy is the construction of two new nuclear blocks at the Paks nuclear plant with a total new capacity of 2.4 GW.<sup>34</sup>

### **Poland**

Poland's energy system is extremely dependent on coal, as coal provides 80% of total electricity generation (Figure 3). The country is home to the largest number of lignite and hard coal mines in the EU. Yet, imports, mostly from Russia, have increased as domestic coal production is declining due to a lack of profitability.<sup>35</sup> With 112,500 people employed in the coal sector, Poland is the European country with the largest number of jobs in the coal sector. There are strong ties between the coal industry and the national government as most of the coal mines are either directly public owned or indirectly state controlled.<sup>36</sup>

The Polish parliamentary elections in autumn 2019 triggered initial debates about a phase out of coal but the re-elected government plans to maintain coal's leading role in the energy mix until at least 2030.<sup>37</sup> The draft national energy strategy 2040 posits that Poland will still produce 56-60% of its energy from coal

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<sup>31</sup> Central European Financial Observer (2019). [Czech CEZ starts decommissioning oldest coal power plants](#)

<sup>32</sup> CEZ Group (2020). [CEZ didn't use the option](#)

<sup>33</sup> Hungary Today (2019). [Hungarian state company buys Mátra power plant](#)

<sup>34</sup> Enerdata (2015). [Euratom approves Paks II fuel supply contract \(Hungary\)](#)

<sup>35</sup> Reuters (2018). [Polish coal imports jump, Russia biggest supplier](#)

<sup>36</sup> Baran, J. et al. (2018). [Coal transitions in Poland – Options for a fair and feasible transition for the Polish coal sector](#)

<sup>37</sup> POLITICO (2019). [Is Poland ready to call time on King Coal?](#)



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in 2030 and plans for the construction of new coal plants. However, it also outlines plans for the share of coal power production to decrease to 28% by 2040.<sup>38</sup> Similarly, in the draft NECP, the government plans that Poland will still run 22.9 GW out of currently 26.9 GW of installed coal capacity in 2030.<sup>39</sup> However, discussions about the role of coal in heating-derived air pollution may accelerate the decline of coal power. While Poland currently has no nuclear plants, the government plans to add nuclear energy generation capacities from 2035 onwards.

### Romania

Compared to the other countries, coal plays a minor role in Romania's electricity mix (25% of electricity generation) but the sector still provides 18,600 direct jobs (Figure 3). Current political dynamics in Romania do not signal a shift away from coal, and there is no formal coal-phase out discussion at the national or local level, though there are informal deliberations on a transition to gas power generation. The Romanian government is a strong public supporter of coal power generation and heavily subsidises the sector. It has a direct financial stake in the fate of the coal industry as 98% of coal units remain state-owned.<sup>40</sup>

Romania's draft NECP as well as the Energy Strategy 2019-2030 foresee only a slight decrease in coal use.<sup>41</sup> 3.2GW out of the current installed capacity of 5.5GW are expected to still be in operation in 2030.<sup>42</sup> Moreover, a priority project of the Energy Strategy is a new 600 MW lignite coal plant in Rovinari built with Chinese funding, but this plant has not yet received the relevant permits and it is unclear whether it will ever be built. Furthermore, the government is planning to expand Romania's existing nuclear power capacities.<sup>43</sup>

### Slovakia

Slovakia relies less on coal than its neighbouring countries (12% of electricity production) and production has been decreasing steadily (Figure 3). Hard coal is imported, and domestic lignite is of low quality and expensive. The number of jobs provided by the Slovakian lignite sector is small with 2,700 direct jobs.

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<sup>38</sup> Instrat (2019). [PEP2040 in numbers](#)

<sup>39</sup> CAN-E & Sandbag (2019). [Just Transition or just talk?](#)

<sup>40</sup> CEE Bankwatch Network (2020). [The energy sector in Romania](#)

<sup>41</sup> Ministry of Energy (2016). [Romanian energy strategy 2016-2030, with an outlook to 2050](#)

<sup>42</sup> CAN-E & Sandbag (2019). [Just Transition or just talk?](#)

<sup>43</sup> Business Review (2018). [Nuclearelectrica's strategy for building the 3<sup>rd</sup> and 4<sup>th</sup> Cernavoda reactors](#)



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In 2018, Slovakia's Economy Minister pledged to end lignite subsidies supplying the country's only lignite coal plant by 2023.<sup>44</sup> Newly elected President Čaputová and Prime Minister Pellegrini announced in June 2019 that the country will stop burning coal to produce electricity by the end of 2023 and Slovakia subsequently joined the international Powering Past Coal Alliance.<sup>45</sup> Similar to the neighbouring countries, Slovakia's government plans to increase the share of nuclear energy.

## A just energy transition: the way to go

A climate transition is just if it ensures support for the workers and regions affected by climate policy, for example through offering retraining schemes. In addition, the speed of this transition needs to be in line with the goals of the Paris Agreement to protect people from the most harmful impacts of climate change.<sup>46</sup>

**Many coal and industrial regions in Central and Eastern Europe already went through a transition due to the restructuring of the socialist economies** after the end of the Soviet Union. Back then, measures to sufficiently buffer socio-economic consequences were lacking. At the same time, these coal regions differ with respect to many characteristics such as the degree of urbanisation, economic prosperity or whether they mine hard coal or lignite. This means that each region requires its unique transition strategy driven by the region itself and supported by a national coal phase out plan to guide transition planning with clear timelines.

**Czechia and Slovakia have already progressed in their efforts to lay the grounds for a managed transition away from coal** and developed transition strategies for their coal regions. The development of transition strategies is supported by the inclusion of some regions as pilot regions in the EU's Coal Regions in Transition Platform.<sup>47</sup> For example, the Romanian government now receives support from the Commission to develop a regional transition strategy for its hard coal region Jiu Valley. The creation of a Just Transition Mechanism, including a Just Transition Fund, which will tie financial support for regions developing strategies

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<sup>44</sup> Reuters (2019). [Slovakia to pull plug on coal subsidies from 2023: minister](#)

<sup>45</sup> Powering Past Coal Alliance (2019). [Germany and Slovakia head list of new members at UN Climate Action Summit](#)

<sup>46</sup> E3G (2020). [Just Transition](#)

<sup>47</sup> European Commission (2020). [The platform for coal regions in transition](#)



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to the achievement of the EU's climate goals can become a major driver of more, and more ambitious regional Just Transition strategies.

**In Bulgaria, Hungary and Poland national and regional governments have so far failed to plan for the transition of their coal regions.** The analysis shows that civil society has an important role in initiating Just Transition debates when national or regional governments remain inactive. In addition, the degree to which regional governments are involved in national decision-making processes makes a difference as regional actors are often the ones that start planning for a Just Transition.

**All countries in the region have so far mainly focused on the challenge to phase out coal and have paid little attention to transition planning in sectors beyond energy.** Doing so is, however, becoming more pressing as, for example, the move to e-mobility by German car makers affects suppliers in Central and Eastern Europe which largely produce for internal combustion vehicles.<sup>48</sup>

## Country insights

### Bulgaria

A debate on Just Transition has emerged in Bulgaria in recent months, but these discussions have not yet led to concrete solutions and strategies. Eventual mine closures often come as a surprise to local authorities as a coal phase out date and pathway are non-existing but would be required to provide time horizons to ensure a managed transition away from coal. Therefore, civil society plays a key role in seeking to put this topic on the agenda. The impacts of an unmanaged coal phase out would be severe, with the Yugoiztochen region where GDP per capita is almost 20% below the national average likely loosing over 10,000 jobs (out of 14,500 jobs in the coal sector).<sup>49</sup> Bulgaria is the only EU country with large coal generation capacities of which no region has not joined the EU's Coal Regions in Transition Platform.

### Czechia

Czechia's prospects for a well-managed transition for the 21,600 workers in the coal sector are promising. First, the Czech coal commission which was established in summer 2019 is supposed to agree on a phase out date for coal until September 2020 which would give planning security to a Just Transition

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<sup>48</sup> Europeum (2019). **The Visegrad Four and Germany: which shared priorities in the next Commission?**

<sup>49</sup> European Commission (2018). **EU coal regions: Opportunities and challenges ahead**



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process. A dedicated commission working group on Just Transition is mandated to identify support measures for the affected regions. Secondly, the Czech government has established an office responsible for coordinating the future development of coal regions and already adopted a national strategic framework for the economic development of the country's three mining regions (RE:START) in 2017.<sup>50</sup> This program could become a promising Just Transition framework once it is linked to a coal phase out date. Third, all Czech coal regions (Karlovy Vary, Usti and Moravia Silesia) are pilot regions of the EU's Coal Platform which will further facilitate their transition.

## Hungary

Hungary lacks a constructive Just Transition debate despite the President's recent announcement to phase out coal until 2030. There is no Just Transition strategy for the Borsod basin in Borsod-Abaúj-Zemplén county where the Mátra Power Plant and its adjacent lignite mines are located. Civil society attempts to put the need for revitalizing the area on the agenda but so far lacks the necessary political backing.<sup>51</sup> Nonetheless, some projects have already been implemented at the Mátra site such as the instalment of renewable energy generation facilities.<sup>52</sup> Compared to the other countries, the transition challenge is small with only 2,500 people employed in the coal sector.

## Poland

Poland's national government has not engaged in planning for a Just Transition of the Polish coal regions even though it is the EU country with the largest workforce in the coal sector (112,500 jobs). Local support for ending coal activities is growing in the region and, notably, Konin municipality in Greater Poland is planning to replace coal with renewable energy sources.<sup>53</sup> Greater Poland and Upper Silesia are pilot regions of the EU's Coal Platform which is helping to initiate regional planning for the transition away from coal. However, these efforts would benefit from clear national guidance on a date and pathway for the phase out of coal.

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<sup>50</sup> European Commission (2019). [RE:START-Strategy for economic restructuring of Czech coal regions](#)

<sup>51</sup> CEE Bankwatch Network (2018). [Heroes of Just Transition](#)

<sup>52</sup> Balkan Green Energy News (2019). [Transition away from coal by Matra power plant](#)

<sup>53</sup> CEE Bankwatch Network (2018). [Heroes of Just Transition](#)



## Romania

Romania's two coal regions have different prospects for a Just Transition. No tangible steps have been taken by the central or local governments to develop a transition strategy for the lignite region Gorj county where 13,100 out of Romania's 18,600 jobs in the coal sector are located.<sup>54</sup> 13 mayors from the region have recently asked the government to support a Just Transition but did not offer any climate commitments.

In contrast, the hard coal region Jiu Valley is a pilot region of the EU's Coal Platform and its social and economic transformation is slowly beginning. In July 2019, mayors from the Jiu Valley signed the "Jiu Valley Partnership for Just Transition", a memorandum of understanding to foster collaboration on the transition of their communities to a diversified and sustainable economy.<sup>55</sup> In addition, the central government now receives EU financial support to develop a transition strategy for the region.<sup>56</sup> This endeavour would benefit from clear national guidance on a date and pathway for the phase out of coal.

## Slovakia

Slovakia's national government approved an action plan in June 2019 which will prepare the country's main lignite mining region Upper Nitra for a post-coal future.<sup>57</sup> The development of the plan began in 2017 and was instigated by the Mayor of Prievidza in cooperation with the Association of Towns and Municipalities of Horná Nitra. The plan is considered a good practice example as it was created based on input from local communities and with support channelled through the EU's Coal Platform. The Slovak Trenčín administrative region of which Upper Nitra is part is a pilot region of the platform. Coupled with its recently announced coal phase out, Slovakia can become a model for fellow countries showing how to transition away from coal in a participatory manner. However, this requires continued engagement of civil society and municipalities by the Slovak government in the implementation of the action plan.

<sup>54</sup> European Commission (2018). [EU coal regions: Opportunities and challenges ahead](#)

<sup>55</sup> just-transition.info (2019). [Mayors from Jiu Valley, one of Romania's main mining regions, agree in Brussels to collaborate for a just transition](#)

<sup>56</sup> just-transition.info (2019). [Jiu Valley receives technical assistance from Coal Platform through START programme](#)

<sup>57</sup> CEE Bankwatch Network (2019). [Just Transition plan for Slovak coal region Upper Nitra to be approved today](#)



## Energy security: a web of complex ties

**Energy security is a key concern in Central and Eastern Europe, especially regarding the region's dependency on Russia** for gas, but also oil and hard coal as well as nuclear fuel and technology. Chinese companies are also striving to participate in nuclear projects in the region. Romania is a notable exception as it has large domestic oil and gas reserves and a relatively large share of renewable energy. While governments formally recognise their countries' dependence on Russian imports as a problem because of the leverage it gives Russia over them, their political choices, such as building additional gas infrastructure and nuclear power, increase that dependency. One example is the Turkstream pipeline, which connects Bulgaria and Russia and has recently been inaugurated. The negative effects of this dependency can be seen in the gas crisis of 2009, when the end of Russian gas exports to Ukraine caused serious humanitarian impacts in the Balkans but also affected the wider Central and Eastern European region.

**In their desire to achieve greater independence from Russian imports, the countries have turned to liquefied natural gas (LNG) imports from the Middle East and the US** via LNG ports in Poland, Greece and Croatia, some of which are still in construction, **and stronger interconnections with the aim of improving North-South transit**. Moreover, significant oil and gas reserves off the Romanian Black Sea coast are also considered to be an important additional source of fossil fuels supply. However, these projects will not solve the underlying challenge of transitioning to a secure and decarbonized energy system: a recent study has found that the existing EU gas infrastructure is sufficient for securing future gas supply to the EU, even in the case of supply disruptions.<sup>58</sup>

**The Nord Stream II pipeline, which is still under construction, is also relevant in regional debates on energy security.** It is supposed to transport Russian gas to Germany, circumventing Ukraine and other Central and Eastern European countries via the Baltic Sea, thereby decreasing their geopolitical leverage and revenues from transit fees.<sup>59</sup> Countries across the region as well as EU institutions have voiced opposition to the project.

**The large potential of renewable energy as a domestically produced energy source plays little to no role in discussions on energy security** across all countries studied. Increasing electricity generation from wind and solar would

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<sup>58</sup> Artelys (2020). **An updated analysis on gas supply security in the EU energy transition**

<sup>59</sup> Brookings (2019). **Nord Stream II: A failed test for EU unity and trans-Atlantic coordination**



help improve energy independence, and its positive benefits can be amplified through better regional, cross-national market integration and improved electricity interconnections. In a 2017 assessment, the European Commission found that the electricity interconnection levels of Bulgaria, Poland and Romania are below the EU's target of 10% of total production by 2020.<sup>60</sup>

Figure 4: Import dependency (net imports as % of gross available energy, 2017)

	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	EU
Import Dependency	39.5%	37.2%	62.6%	38.3%	23.1%	64.8%	55.1%

Source: Eurostat (2019). [Energy production and imports](#)

## Country insights

### Bulgaria

Bulgaria's import dependence has in recent years decreased to 40% (Figure 4), and diversification of import sources is a stated goal. It is below the EU average but remains a serious issue because key parts of the energy sector are highly dependent on Russian imports: 90% of natural gas, 80% of oil, and the entirety of Bulgaria's nuclear fuel is imported from Russia. Furthermore, the Russian company Lukoil operates a major oil refinery in Bulgaria. As coal power production is decreasing, tapping local, non-fossil sources of energy becomes more important in order to avoid an increased dependency on Russia.

Western allies have openly criticised Russia's role as Bulgaria's energy security guarantor, but the country's dependence on Russia is unlikely to change soon. A branch of Turkstream, a pipeline connecting Russia and Turkey, is now making landfall in Bulgaria and has recently been inaugurated, though Bulgarian part of the project is not yet completed. Recently, Bulgaria has purchased a 20% share in an LNG terminal project in Greek Alexandroupolis, but the terminal is not built yet and is at serious risk of becoming a stranded asset.<sup>61</sup>

<sup>60</sup> European Commission (2017). [Energy Union factsheets for EU countries](#)

<sup>61</sup> New Europe (2019). [Bulgaria to acquire 20% of Alexandroupolis LNG project in Greece](#)



## Czechia

37% of Czechia's total energy use is covered by imported resources, mostly oil and gas (Figure 4).<sup>62</sup> The country relies on Russia for almost the entirety of its gas imports due to long-term contractual obligations.<sup>63</sup> Additional gas power capacities are perceived critically as they would increase the dependence on Russia.<sup>64</sup> Almost all crude oil imports originate from former Soviet Union countries (56% from Russia, 33% from Azerbaijan), in addition to a small domestic production in Southern Moravia and other import countries.<sup>65</sup> The government's plan to expand nuclear capacities would increase Czechia's import dependency as all nuclear fuel is imported from Russia.

However, energy security is less of an issue in Czechia than in other countries in the region and its dependence on specific countries could technically be reduced as the necessary infrastructure is available. The Czech electricity sector is characterized by strong overcapacities, and in 2017, 13 TWh out of 81 TWh net electricity generation were exported.<sup>66</sup> This makes Czechia the 7<sup>th</sup> largest electricity exporter worldwide.<sup>67</sup>

## Hungary

Hungary is highly dependent on energy imports, with a dependency rate of 63% (Figure 4). The energy dependence is especially high for oil (82%), natural gas (78%) and nuclear fuel (100%). Russia is the most important source of energy imports, delivering 39% of oil imports, 44% of gas imports, and all nuclear fuel supplies.<sup>68</sup> When including the fact that most gas imported via Austria originated from Russia as well that share rises to 95%.<sup>69</sup>

Although the government is seeking to diversify the sources of its gas imports through importing LNG from the US and Qatar via Polish and Croatian ports, the focus remains on Russian imports. Hungary is planning to import Russian gas via the Turkstream pipeline.<sup>70</sup> Another potential import source is offshore gas drilled

<sup>62</sup> This number does not include nuclear fuel rods, which are also imported.

<sup>63</sup> European Commission (n.d.). [Towards an Energy Union – Czech Republic](#)

<sup>64</sup> Export.gov (2018). [Czech Republic – Energy](#)

<sup>65</sup> OECD (2019). [Fossil Fuel Support Country Note: Czech Republic](#)

<sup>66</sup> ERO (2018). [Yearly Report on the Operation of the Czech Electrical Grid](#)

<sup>67</sup> The Global Economy (2019). [Electricity exports – Country rankings](#)

<sup>68</sup> European Commission (n.d.). [Benefits of Energy Union for Hungary](#)

<sup>69</sup> REKK Foundation et al. (2018). [‘Beyond gas’ – energy security issues in the V4 after 2020](#)

<sup>70</sup> Financial Observer (2018). [Hungary looks to Moscow as it mulls gas options](#)



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in the Romanian Black Sea, though it is currently not clear whether these reserves will be exploited. The Hungarian government is actively lobbying for the project.<sup>71</sup> The government's stated aim of expanding nuclear energy would significantly increase Hungary's reliance on Russia for technology, financing and nuclear fuel imports.

### Poland

Poland's energy import dependence is low with 38% (Figure 4) due to its heavy use of domestic coal, but dependence levels have been rising recently. Oil and gas, which jointly account for 33% of Polish energy consumption, are mostly imported. 70% of gas imports come from Russia, which is a matter of serious concern to both political decision-makers and the public. A total of 13 million tonnes of Russian hard coal have been imported in 2018, while 63 million tonnes were mined domestically.<sup>72</sup> This shows that, despite widespread beliefs, coal is not a guarantor of Polish energy independence.<sup>73</sup>

Decreasing the country's dependence on Russia and diversifying gas import sources is a governmental priority. The LNG terminal in Świnoujście that opened in 2015 for LNG imports from the US, Qatar and Norway is part of this process. Furthermore, a planned Baltic pipeline would allow further gas imports from Norway.<sup>74</sup> In line with this, Poland is one of the most vocal critics of the planned Nord Stream II pipeline, which it fears will increase Gazprom's market power and Russian influence in Europe.

### Romania

With 23% net imports as a share of gross available energy (Figure 4), Romania is one of Europe's most energy-independent countries thanks to large domestic gas and oil reserves as well as the extensive use of hydropower, nuclear power and biomass. The government aims to achieve complete energy independence. It is the largest producer of oil and gas in Central and Eastern Europe and may play a major role on the European oil and gas markets due to recent discoveries in the Black Sea.

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<sup>71</sup> Reuters (2019). **Hungary calls on U.S. to spur Exxon gas project in Black Sea**

<sup>72</sup> Poland In (2019). **Poland largest EU hard coal producer, Germany strongest lignite user: Eurostat**

<sup>73</sup> Reuters (2018). **Polish coal imports jump, Russia biggest supplier;** Minister Aktywów Państwowych (2020). **Interpelacja nr 156**

<sup>74</sup> REKK Foundation et al. (2018). **'Beyond gas' – energy security issues in the V4 after 2020**



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However, the exploitation of offshore reserves in the Black Sea has long been hindered by restrictive policy changes<sup>75</sup>, and Exxon Mobil has recently announced its withdrawal from the project, causing worries that their share may be purchased by Lukoil, thus increasing Romania's dependence on Russia.<sup>76</sup> First projects in the Black Sea have started operating with financial support from the European Bank for Reconstruction and Development (EBRD).<sup>77</sup>

### Slovakia

Slovakia is highly dependent on energy imports and has the highest dependency rate (65%) of all countries studied in this paper (Figure 4). It is mostly reliant on oil and gas imports from Russia. 90% of Slovakia's natural gas and oil come from Russia under a long-term contract with Gazprom until 2028.<sup>78</sup> In recent years, Slovakia has succeeded in diversifying sources and routes for the imports of fossil fuels. It has made large investments in cross-border gas infrastructure, with the aim of connecting Slovakia to a new North-South gas corridor between LNG ports in Croatia and Poland.<sup>79</sup>

Slovakia is currently an important transit country for Russian gas imports through Ukraine into Europe, flowing to the Slovakian refinery Slovnaft and smaller Czech refineries. The government aims to maintain the country's status as a transit country as this is seen to be contributing to energy security, but Slovakia's position will weaken if Nord Stream II becomes operational.<sup>80</sup> Annual transit has already fallen from 80 billion cubic metres (bcm) to 60 bcm due to the Nord Stream I pipeline.<sup>81</sup>

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<sup>75</sup> Reuters (2019). **Romania's Black Sea gas projects hanging by a thread**

<sup>76</sup> Romania Insider (2020). **Exxon may try to bypass RO Govt. in the sale of offshore gas project in Black Sea**

<sup>77</sup> EBRD (2019). **Midia Gas Development Project**

<sup>78</sup> SME (2008). **SPP podpísal s Gazpromom novú 20-ročnú zmluvu**

<sup>79</sup> IEA (2018). **Energy Policies of IEA Countries: Slovak Republic 2018 Review**

<sup>80</sup> REKK Foundation et al. (2018). **'Beyond gas' – energy security issues in the V4 after 2020**

<sup>81</sup> IEA (2018). **Energy Policies of IEA Countries: Slovak Republic 2018 Review**



E3G

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## Energy efficiency: a crucial part of the decarbonization puzzle

**Energy efficiency is often praised as the ‘sleeping giant’ of the energy transition** because it can make a substantial contribution to the reduction of greenhouse gas emissions while also providing many other benefits such as clean air, a potential that is not yet used.<sup>82</sup> This applies in particular to the countries studied here because their economies are very energy intensive, all of them consuming relatively more energy relative to output than the EU average. This is the consequence of high levels of energy wastage during socialist times resulting from the reliance on very energy intensive industries without market prices for energy, as well as more recent factors such as the poor implementation of efficiency programmes.

**All this makes energy efficiency improvements an area with major potential for achieving emissions reductions, for example through building renovations.**

Relative energy intensities across the region have already decreased over the past 30 years, in large parts due to economic restructuring and the collapse of inefficient industries in the years after 1990, but also thanks to targeted efficiency measures. Success levels vary between the countries studied, as, for example, Slovakia has implemented effective efficiency programmes that are significantly more advanced than those in the other countries studied.<sup>83</sup>

**The issue of energy poverty is closely related to efficiency measures.** Energy poverty, that is, household’s inability to access enough heating, cooling and electricity, continues to be a major problem especially in Slovakia, Hungary and Bulgaria.<sup>84</sup> To unlock the full potential of energy efficiency improvements, significant investments are needed. Some of this investment can be provided through sources such as the EU budget and development banks, but private funding will be necessary, too. When assessing countries’ progress in achieving their EU energy efficiency targets it is important to note that these targets are based on very conservative business-as-usual scenarios, making potential gains seem relatively larger.

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<sup>82</sup> E3G (2020). [Energy Efficiency](#)

<sup>83</sup> WiseEuropa et al. (2019). [CEE Climate Policy Frontier](#)

<sup>84</sup> Cold@Home (2020). [Over-exposed: Energy Poverty in Central & Eastern Europe](#)



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## Country insights

### Bulgaria

Bulgaria is the most energy-intensive economy in the EU. Energy saving targets will likely be exceeded, mainly as the result of business-as-usual scenarios and the decline of energy-intensive branches of industries such as metallurgy since the early 1990s. Low energy prices make advanced renovation measures financially less attractive.<sup>85</sup>

Improving energy efficiency is a cornerstone of the government's energy policy. Bulgaria has implemented one of the world's largest renovation programmes with a total budget of €1bn, but these funds were not used to leverage private investments as the programme provided 100% grants. The implementation of energy efficiency policies has in the past also faced political challenges; most importantly public concerns over the misuse of government funds. Moving forward, the main challenge will be mobilizing private investments for efficiency improvements.

### Czechia

Czechia has one of the EU's most energy-intensive economies, a result of its high degree of industrialisation as well as its electricity exports, and it is questionable whether Czechia will be able to achieve its energy efficiency targets. A particular issue is that the strong reliance on combined heat and power (CHP) contributes to local dependencies on coal power stations as 40% of residential heat demand is covered by district heating, and 75% of this centrally produced heat is produced through co-generation of heat and electricity.<sup>86</sup> Any energy transition plan must include measures to transition these district heating systems to sustainable energy sources, in which case they could be an asset for emission reductions due to their relatively high efficiency.

One area of recent progress is housing, which holds further potential for major efficiency improvements.<sup>87</sup> Thanks to the "Green Savings Programme", which has been financed with the revenues from auctioning EU emission certificates,

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<sup>85</sup> EmBuild (2018). **A Snapshot of Building Renovation Strategies**

<sup>86</sup> Euroheat & Power (2019). **District Energy in the Czech Republic;** Ministry of Industry and Trade (2016). **National Energy Efficiency Action Plan of the Czech Republic**

<sup>87</sup> Odyssee-Mure (2018). **Czech Republic Energy Profile**



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and other programmes, all buildings in all regions now have access to schemes for renovation as well as efficient construction.<sup>88</sup>

## **Hungary**

Hungary's relative energy intensity is the lowest among the Visegrád states, but it is still significantly above the EU average, mainly due to poor residential energy efficiency.<sup>89</sup> Energy demand has increased slightly over the past years, mostly due to increased energy consumption by the transport sector and industry. Energy efficiency in industry and services was also improved in the same time thanks to measures in the private sector in response to the introduction of energy efficiency requirements.<sup>90</sup>

The untapped energy efficiency potential is significant, particularly in the buildings sector which is the largest energy consumer at 34% of total energy demand.<sup>91</sup> Currently, the Hungarian government is using EU energy efficiency funds primarily to renovate public buildings. However, the "Warmth of Home" program with a total budget of €15.5 million is now also supporting efficiency measures in private buildings.<sup>92</sup>

## **Poland**

Poland has considerable energy efficiency potential, and there are strong overlaps between inefficient use of energy and the pressing problem of air pollution. Problematically, 70% of single-family buildings in Poland use coal for heating.<sup>93</sup> Furthermore, most residential buildings have no or insufficient thermal insulation. At the moment, the government is not making full use of the available opportunities for efficiency investments, as only 2.8% of EU funding is dedicated to building efficiency measures (compared to an EU average of 3.9%), and only 1.3% of the total funding from international financial institutions.<sup>94</sup> Improving energy efficiency would require additional investments.

The government has taken steps to improve energy efficiency in the public sector, buildings and industry. Consumer utilities selling electricity to the end-

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<sup>88</sup> Buildings Performance Institute (2017). **A Snapshot of National Renovation Strategies**

<sup>89</sup> European Environment Agency (2016). **Energy intensity**

<sup>90</sup> Odyssee-Mure (2018). **Hungary Profile**

<sup>91</sup> Odyssee-Mure (2018). **Hungary Profile**

<sup>92</sup> Hungary Today (2018). **Government Raises Warmth of Home Program's Budget to 5 Billion Huf**

<sup>93</sup> Buildings Performance Institute (2018). **Financing Renovation of Buildings in Poland**

<sup>94</sup> Buildings Performance Institute (2018). **Financing Renovation of Buildings in Poland**



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user market must participate in a system of “white certificates” which award energy efficiency measures.<sup>95</sup> Furthermore, a country-wide support scheme was introduced in 2019 to incentivize the exchange of coal-fired boilers and the thermal insulation of buildings. However, the implementation of the programme needs to be further strengthened and it needs support through EU funds to become fully effective.

### Romania

The Romanian economy is very energy intensive, at almost twice the EU average. The high energy intensity is caused by a lack of investments, but also driven by the large availability of domestic energy resources. It has been estimated that up to 80% of emissions from the building stock could be reduced through refurbishment. Romania is on track to meet its 2020 target of reducing energy consumption by 19%, but the target has been criticized for being too low, as it would allow final energy consumption to increase relative to GDP.

The major consumers of energy are industrial facilities and residential buildings. Industrial energy consumption has fallen by 55% since 1995, mostly due to a sharp decline in the energy-intensive sectors of metalworking and chemical industry.<sup>96</sup> Residential energy efficiency improvements are urgently needed as most residential buildings were constructed before 1990 with low thermal insulation.<sup>97</sup> The government is providing financial support for residential efficiency measures to regional institutions and is subsidising interest rates for credits taken for the purpose of renovation.<sup>98</sup>

### Slovakia

Slovakia is one of the leading nations in energy intensity reductions over the past 20 years thanks to significant improvements in industrial and residential energy efficiency as well as economic restructuring. For example, around 60% of flats have been insulated, and at the current renovation levels, all flats will be insulated by 2030.

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<sup>95</sup> Export.gov (2019). **Poland - Energy**

<sup>96</sup> Clodničchi, R. (2018). **Energy Efficiency in the Romanian Industry**

<sup>97</sup> EBRD (2017). **EBRD launches energy efficiency framework for Romanian homes**

<sup>98</sup> CEE Bankwatch Network (2019). **Taking the chill off Romania’s residential buildings**



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However, Slovakia's energy intensity is still above the EU average and its efficiency target of 30.3% by 2030 is below the EU average of 32.5%.<sup>99</sup> A key obstacle to implementing additional energy efficiency projects has been a lack of funding. Most efficiency investments are made through EU funds as well as contributions from other international institutions such as the EBRD.<sup>100</sup> Further efforts must target the large industrial sector, which is responsible for a relatively high 42% of overall energy consumption.<sup>101</sup>

## Climate action: slowly coming to the public's attention

**Concern about climate change is low in the countries studied relative to the EU average**, and public concern focuses primarily on economic issues (Figure 5). Nonetheless, **concern about climate change is slowly increasing in all countries**. The strongest increase occurred in Czechia (from 6% in 2017 to 14% in 2019) and the smallest increase took place in Bulgaria (from 4% to 6%).<sup>102</sup> In addition, new climate movements like Fridays for Future are raising their voices across the region, and climate action has become the top priority of young people in Poland, Czechia and Slovakia.<sup>103</sup>

**Concern about environmental issues is low, too, though there are exceptions with regards to visible local issues**, for example in Bulgaria. Environmental concerns are most pronounced regarding air pollution and waste.<sup>104</sup> A 2017 World Health Organization report found that Eastern European and Balkan countries have the most annual air pollution-related deaths in Europe.<sup>105</sup> Air quality is particularly poor in Bulgaria, Hungary and Poland, with 33 of the 50 most-polluted cities in Europe located in Poland. The main reason for this is a heavy reliance on coal, wood and waste for residential heating.<sup>106</sup> The problem of air pollution is increasingly recognized by the public, and there are citizens'

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<sup>99</sup> Ministry of Economy, Slovak republic (2019). **Proposal for an integrated national energy and climate plan for 2021-2030**

<sup>100</sup> QualitEE (2018). **Country Report on the Energy Efficiency Services Market and Quality: Slovakia**

<sup>101</sup> IEA (2018). **Slovak Republic: 2018 Review**

<sup>102</sup> European Commission (2017). **Standard Eurobarometer 88**

<sup>103</sup> GZERO Media (2019). **Graphic Truth: Europe's Young and Restless**

<sup>104</sup> European Commission (2017). **Special Eurobarometer 468: Attitudes of European citizens towards the environment**

<sup>105</sup> World Health Organization (2017). **World Health Statistics 2017: Monitoring health for the SDGs**

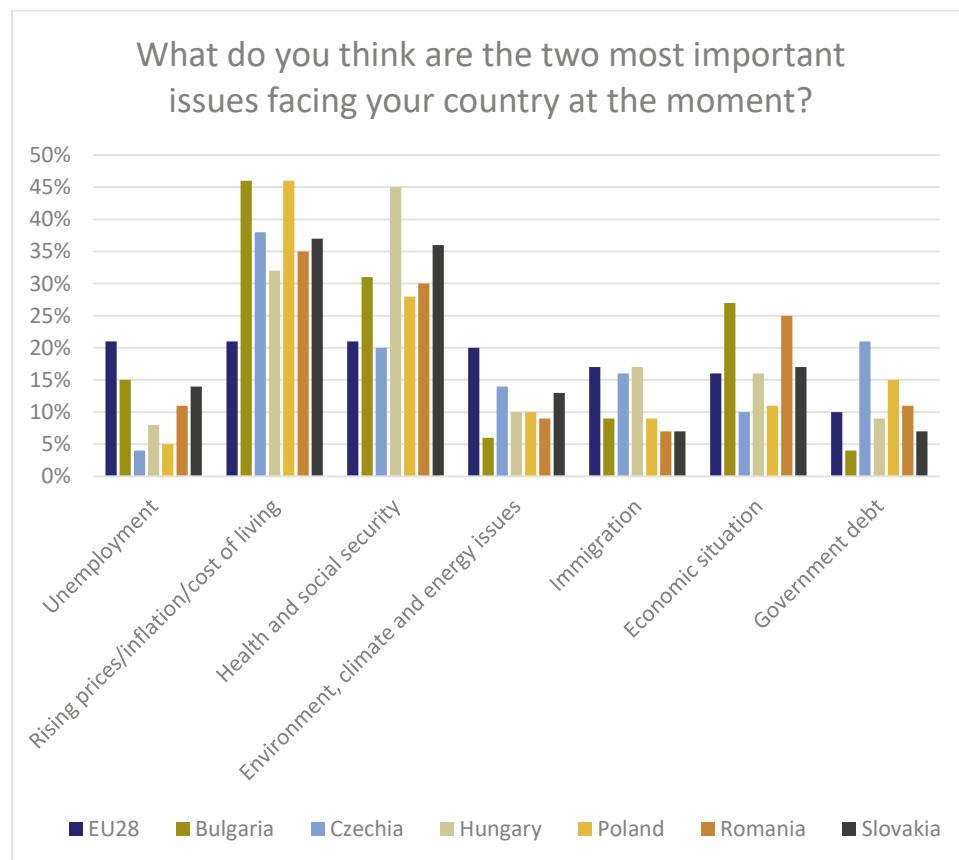
<sup>106</sup> World Bank Group (2019). **Air quality in Poland, what are the issues and what can be done?**



initiatives working on the topic across the region, which have been successful at the local level. Pronouncing the link between coal-based household heating systems as well as coal-fired power generation and air quality is an opportunity to gain greater support for a coal phase out and better energy efficiency measures in many countries of the region.

**Public opinion regarding renewables has been relatively negative**, both due to active government messaging against renewables and claims that electricity price hikes were caused by the initial market integration of renewables (see the section on renewables). However, this has been changing recently, for example the Polish government began to strongly support solar PV and clean air support schemes. Furthermore, **affordability of energy is a very important issue**, and its importance can be seen in the decision by some governments, e.g. in Bulgaria, Hungary, Poland and Romania, to artificially keep energy prices low.

*Figure 5: Public concern for climate and energy issues is low*



Source: European Commission (2019). *Standard Eurobarometer 91*



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## Country insights

### Bulgaria

Climate issues receive little public attention but interest in the risks of climate change and the need for domestic action to counteract these grows. Energy and environmental matters are of high importance. The price of energy is a headline topic in the media. Problematically, renewable energy is widely perceived to be associated with increases in energy prices due to public communication mistakes and the lack of adequate policies. These concerns were amplified because the initially generous feed-in tariff for renewables was related to worries about corruption.<sup>107</sup>

Concern for tangible environmental problems is present in cases of extreme weather events or the protection of specific nature sites because Bulgaria's nature is a central part of the national identity. Over 60% of Bulgarians are concerned about air and water pollution, and citizen science initiatives have significantly contributed to the topic's increasing public profile.<sup>108</sup>

### Czechia

Public attention paid to climate change and support for climate action have increased because of the rise of public protests like the Fridays for Future youth strikes and climate impacts, mainly droughts. The government's decision to set up a coal commission (see section on coal) was an explicit response to the youth climate strikes. Renewables are generally perceived positively, but views are also still influenced by the price hikes caused during the initial expansion of renewables. Solar entrepreneurs are often referred to as "solar barons" and blamed for harming the country's economy.<sup>109</sup>

### Hungary

While climate change has long received only little attention in Hungary, the emergence of the Fridays for Future youth protests in recent months has significantly raised the profile of climate issues and increased public concerns about climate change. As in many of the other countries studied, the price of electricity remains an important public and political concern, and the

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<sup>107</sup> Andreas, Burns & Touza (2018). **Overcoming energy injustice? Bulgaria's renewable energy transition in times of crisis**

<sup>108</sup> Trend Research Center (2018). **Attitudes of Bulgarians to Environmental Issues**; HEAL (2018). **Air Pollution and Health in Bulgaria**

<sup>109</sup> Energy Transition (2018). **Is the Czech energy sector about to become the "Wild East"?**

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government has fixed end user energy prices 30% below the market price, with the difference being covered by the state-owned energy company.

## Poland

The coal industry continues to be highly regarded in Poland, with miners being very respected. In addition, coal miners are well-organized within powerful trade unions which gives them significant influence.<sup>110</sup> However, climate and environmental issues have begun to receive more attention in public discourse and the media, starting with the UN climate change conference in Katowice in December 2018, and climate change has featured as an important issue ahead of the parliamentary elections in October 2019.<sup>111</sup>

One important driver of this increased attention to environmental issues, in addition the youth climate movement's growth in 2019, is the issue of air pollution. 33 of the 50 European cities with the worst air quality are in Poland, triggering social movements against local air pollution. Another important political issue is the price of electricity. In 2019, energy prices would have increased strongly due to rising prices for EU emission allowances if the government would not have banned energy providers from increasing prices ahead of the parliamentary election.<sup>112</sup>

## Romania

Affordable energy prices are a matter of serious public concern, causing the government at the beginning of 2019 to cap electricity and gas prices for residential consumers until 2022 which was met with an infringement procedure by the European Commission.<sup>113</sup> The most salient environmental issue is the protection of forests. Illegal logging in Romania's forest and murders and attacks against forest rangers led to street protests.<sup>114</sup> Romania also has one of the highest air pollution levels in the EU, which is mostly caused by the transport and energy sector, and there is increasing public attention to the threat this poses, though this attention is largely concentrated in urban centres.

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<sup>110</sup> Forbes (2018). **Explaining Poland's Coal Paradox**

<sup>111</sup> Green European Journal (2019). **Poland Discovers Ecology**

<sup>112</sup> Energy Transition (2019). **Poland may miss its 2020 targets for renewable energy – unless offshore wind develops fast**

<sup>113</sup> Romania-Insider (2019). **EC initiates infringement procedure against Romania for capping natural gas price**

<sup>114</sup> BBC (2019). **Romanians protest over illegal logging and murders**



## Slovakia

Awareness about the importance of climate change has been increasing in recent years due to youth protests by the Fridays for Future movement, a development that was welcomed by the newly elected President Čaputová.<sup>115</sup> The election of Zuzana Čaputová, a lawyer with a record of championing environmental issues, has in itself been a major step forward on environmental and climate issues in the country.<sup>116</sup> Problematically, the government is planning additional nuclear capacities, and public opinion is more positive towards nuclear energy than in other European countries.<sup>117</sup>

## The EU is driving the energy transition in the region

**Across Central and Eastern Europe, the EU is the most important driver of the clean energy transition through its climate and energy policy.** This includes the pricing of emissions through the EU emissions trading system, and the provision of financing for the transition to sustainable energy through the EU budget. A clear example for the relevance of EU policies and support schemes for the clean energy transition is that Member States in Southeast Europe like Bulgaria and Romania have significantly higher renewable energy capacities than non-EU countries in the regions which have equally good technical potential.<sup>118</sup>

**Climate policy has become a more important political issue in the EU,** with the new Commission proposing a European Green Deal to achieve climate neutrality by 2050. For Central and Eastern European countries, which long paid relatively little attention to climate issues, these debates gained relevance at the government level but also for society. Governments from the region are often making headlines due to their opposition to more climate ambition, as was the case with Poland, Hungary and Czechia's initial opposition to the EU's climate neutrality target. However, this negotiation also showed that the Visegrád group does not always take the same position in energy and climate debates.

**Across the region, EU funds, including revenues from the EU ETS scheme, provide a very significant share of public investment,** ranging from 43% in

<sup>115</sup> TASR (2019). [Caputova Pleased Climate Crisis Resonating Ever More Thanks to Young](#)

<sup>116</sup> Climate Home News (2019). [Slovakian president-elect is a green campaigner who will fight coal subsidies](#)

<sup>117</sup> PwC (2016). [The Future of Power Utilities in Central and Eastern Europe](#)

<sup>118</sup> IRENA (2019). [Renewable Energy Market Analysis: Southeast Europe](#)



Czechia to 61% in Poland in the period between 2015 and 2017 (Figure 6). EU funds are not yet sufficiently used to contribute to the clean energy transition, with the European Court of Auditors warning that the EU's goal of spending 20% of its budget on climate measures by 2020 is likely to be missed and that there are insufficient checks on what that money is spent on.<sup>119</sup> A further problem is that there is often a lack of bankable projects, reducing the absorption and use of EU funds. The upcoming EU budget is expected to allocate more money to the climate transition, including through the Just Transition Fund for regions particularly affected by the transition. If this funding is conditional on the fulfilment of climate targets, it will present an opportunity to ensure a sustainable development of affected regions through targeted investments in infrastructure and social safety.

*Figure 6: Importance of EU funding*

	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia
Total allocation <sup>120</sup> (2014-2020)	€9.9bn	€23.8bn	€25.0bn	€85.2bn	€30.6bn	€15.3bn
Share of public investment (2015-2017)	48.5%	42.5%	55.5%	61.2%	44.9%	54.6%

Source: European Commission (2014). *Partnership agreements on the European structural and investment funds*; European Commission (2019). *Share of cohesion policy per member state to public investment*

**Relations between the EU and Hungary, Poland, Romania are dominated by concerns about the rule of law and corruption.** The recurrence of such problems led to calls for EU spending to be conditional on compliance with the EU's standards on rule of law.<sup>121</sup> Climate and energy issues can also be a source of tensions, as the implementation of EU climate and energy policies in the region is

<sup>119</sup> European Court of Auditors (2016). *Spending at least one euro in every five from the EU budget on climate action: ambitious work underway, but at serious risk of falling short*

<sup>120</sup> Total allocation of European Structural Investment Funds

<sup>121</sup> European Parliamentary Research Service (2018). *Protecting the EU budget against generalised rule of law deficiencies*



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at times slow. For example, Romania has failed to transpose the EU Industrial Emissions Directive (IED) into domestic legislation in time.<sup>122</sup>

## Country insights

### Bulgaria

Bulgaria is one of the EU's newest member states and joined in 2007. Bulgarian public opinion on the EU is positive, with many citizens trusting the EU more than domestic politicians, and Bulgaria ranks second among all EU countries for trust in Brussels.<sup>123</sup> The government plays a reactive role at the EU level but was perceived as an honest broker in negotiations, including on clean energy issues, during its EU Presidency in 2018. The EU is the driving force of the Bulgarian energy transition and investments through EU funds play a significant role in the country, representing 49% of total public investment between 2015-17, but only a small share of this funding is used to support the energy transition (Figure 6).

### Czechia

Most of Czechia's climate policies have been implemented in order to comply with EU regulations. The government has taken a more active position in EU climate and energy negotiations recently, and has, for example, initially rejected an EU-wide target of climate neutrality by 2050 and insisted on the inclusion of nuclear energy as a sustainable source of energy in the EU's plans.

EU funds are a crucial source of funding, representing 43% of public investment between 2015 and 2017 (Figure 6). However, EU funds are not adequately supporting the Czech transformation towards climate neutrality due to a lack of appropriate coordination, planning and monitoring.<sup>124</sup> The European Commission found current Czech prime minister Babis in breach of conflict-of-interest rules which led to large protests demanding his resignation.<sup>125</sup>

### Hungary

Hungary's energy and climate legislation are driven by EU requirements, and the country rarely implements more than the minimum implied by these requirements. It often acts as a brake in EU climate and energy negotiations and

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<sup>122</sup> Business Review (2018). [European Commission: Romania must apply EU norms for industrial emissions or risk referral to EU Court of Justice](#)

<sup>123</sup> EU Open Data Portal (2018). [Standard Eurobarometer 88](#)

<sup>124</sup> CEE Bankwatch Network (2016). [Climate's Enfants Terribles: How new member states' misguided use of EU funds is holding back Europe's clean energy transition](#)

<sup>125</sup> Euronews (2019). [Czechs protest against PM Babis after damning EU report](#)



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was among the countries that initially blocked the EU's target of reaching climate neutrality by 2050 at a European Council in June 2019.

EU funds provide more than half of Hungary's public investments, the second-highest share of all countries studied after Poland (Figure 6). Hungary has been repeatedly accused of mismanaging EU funds and was penalized by the Commission in 2019.<sup>126</sup> Relations between Hungary and the EU are also difficult because of conflicts over migration policy and concerns over breaches to the rule of law which triggered Article 7 sanctions procedures against Hungary. These developments and an anti-Brussels poster campaign led to the suspension of the ruling Fidesz party from the European People's Party.

## Poland

Most of Polish climate and energy policy is implemented to comply with EU regulations. Poland has become the most vocal brake on EU climate policy, leading the opposition to the goal of climate neutrality by 2050, citing a lack of financial support for its transition.<sup>127</sup> While the EU agreed on the objective at a European Council meeting in December 2019, Poland insisted on a caveat that it is not ready to commit to implementing the target. In addition, it often attempts to redefine Commission rules to keep subsidies for its coal plants.<sup>128</sup>

Financial flows from the EU are a crucial revenue source for Poland. At 61% of public investment (between 2015 and 2017), Poland has the highest reliance on EU funds of all countries studied (Figure 6) and is the largest beneficiary of EU funding in net terms. However, this funding has not kick-started a national transition to climate neutrality, as the political will to use these resources for such a transition is missing.<sup>129</sup> Overall relations between Poland and the EU in recent years have been dominated by concerns over the rule of law in Poland, and the Commission has recently referred Poland to the European Court of Justice over concerns regarding the independence of the judiciary system.<sup>130</sup>

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<sup>126</sup> Reuters (2019). [Hungary accepts big penalty for mismanaging EU funds](#)

<sup>127</sup> Bloomberg (2019). [Europe's Climate Push Won't Come Cheap](#)

<sup>128</sup> Sandbag (2018). [Coal capacity payments? Add it to the list of Poland's coal subsidies...](#)

<sup>129</sup> CEE Bankwatch Network (2016). [Climate's Enfants Terribles: How new member states' misguided use of EU funds is holding back Europe's clean energy transition](#)

<sup>130</sup> European Commission (2019). [Rule of Law: European Commission refers Poland to the Court of Justice to protect judges from political control](#)



## Romania

Romania joined the EU in 2007. Since then, it has been subject to a corruption monitoring scheme of the European Commission as it had failed to implement commitments undertaken during accession negotiations.<sup>131</sup> While public trust in the European institutions is high, the government and administration often worry that their interests on EU Cohesion Policy and the Eastern Partnership are not being taken seriously enough in Brussels.

EU policies are an important driver of climate protection and renewable energy expansion. However, the implementation of relevant EU legislation such as the Industrial Emissions Directive is slow, and Romania is subject to infringement procedures from the European Commission.<sup>132</sup> Overall, Romania has taken a passive stance on climate and energy policy discussions in the EU. The country's first-ever EU Presidency in the first half of 2019 was widely recognised as a success, including on energy and climate issues.<sup>133</sup> With 45% EU funds are a crucial source of public investment (Figure 6), and 19% of these EU investments are used for climate objectives.<sup>134</sup>

## Slovakia

Slovakia rarely blocks EU requirements on energy and climate, but also does not voluntarily adopt climate legislation. While often aligning with other members of the Visegrád group in attempting to water down EU energy and climate policy, Slovakia is more open to discussions on these matters and is generally more pro-EU than other Visegrád states.

As in all countries studied, the EU remains the driving force behind Slovak climate ambition. With 55% EU funds are a crucial source of public investment (Figure 6). While Slovakia meets its target for climate mainstreaming in its use of EU funds, it is not certain that all the investments declared as climate spending serve climate objectives, such as in the realms of resource management and environmental infrastructure.<sup>135</sup>

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<sup>131</sup> POLITICO (2019). [EU to end corruption monitoring scheme in Bulgaria, but not Romania](#)

<sup>132</sup> CEE Bankwatch Network (2019). [For the third year in a row, the European Commission asks Romania to stop big polluters](#)

<sup>133</sup> Euractiv (2019). [Romania's EU Presidency: A Glance Back](#)

<sup>134</sup> CEE Bankwatch Network (2016). [Climate's Enfants Terribles: How new member states' misguided use of EU funds is holding back Europe's clean energy transition](#)

<sup>135</sup> CEE Bankwatch Network (2016). [Climate's Enfants Terribles: How new member states' misguided use of EU funds is holding back Europe's clean energy transition](#)



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## RECOMMENDATIONS

Through combining high levels of climate ambition with the offer to financially support the transition, the European Green Deal is likely to accelerate the transition to climate neutrality in Central and Eastern European states in the coming years. The following measures will help to set the right conditions in all countries of the region despite their differences to support the implementation of the Green Deal and speed up the energy transition.

### Make sustainable energy thrive across the region

- > **Develop renewable energy cross-border projects:** Funding for these projects will be available through the EU's Connecting Europe Facility from 2021 onwards. Members of the North Seas Grid could support the development of project proposals in the Black Sea or the Baltic Sea. The EU can foster required improvements in regional and cross-national market integration and electricity interconnections through the CESEC forum and by supporting and enforcing the implementation of EU interconnection targets.<sup>136</sup> This will need to be supported by a revision of the TEN-E Regulation to focus on infrastructure in line with climate neutrality instead of fossil gas projects.<sup>137</sup>
- > **Encourage cross-country learning in bilateral relations:** Member States who are at more advanced stages of the energy transition can provide experience in designing the legal structure for phasing out coal, managing structural change and deploying renewable energy capacity. Cross-border exchange between trade unions on green jobs and unionization can help to ensure the provision of high-quality, climate-friendly jobs.
- > **Leverage the potential of efficiency improvements:** The Commission and governments should define energy efficiency as an infrastructure investment priority to encourage large-scale efficiency programmes that follow the “energy efficiency first” principle.<sup>138</sup>

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<sup>136</sup> European Commission (2020). **Central and South Eastern Europe energy connectivity**

<sup>137</sup> E3G (2018). **Four priorities for a future-oriented Connecting Europe Facility**

<sup>138</sup> E3G (2016). **Energy Efficiency as Infrastructure**; RAP et al. (2017). **Efficiency First in the Energy Union**

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- > **Update the EU's definition of energy security:** The current definition of energy security needs to be updated from one focussed on supply source access to one that incorporates new ways of addressing energy security risks including energy efficiency, domestic renewables, and a smartening of the grid.

## Finance the Just Transition to clean energy

- > **Ensure that the EU budget maximises climate action:** This requires increasing the share of climate-related spending in the Multiannual Financial Framework (MFF), ending support to fossil fuel infrastructure and mainstreaming climate goals across all areas of EU investment.<sup>139</sup>
- > **Use EU funding to deliver the Just Transition:** The EU budget can reduce the social impacts from the transition to a green economy and avoid that the transition gets stuck by linking climate ambition to funding. This means that only countries that present a Paris-compatible phase out plan for coal or another high-emissions technology should be eligible for funding from the Just Transition Fund.<sup>140</sup>
- > **Ensure effectiveness of climate-related spending:** The Commission should ensure through regular monitoring and evaluation that EU funds contribute to climate objectives and establish rigorous anti-corruption measures as part of the budget.

## Support inclusive policy-making processes

- > **Boost clean businesses:** Member States can play a facilitating role in bringing together renewable energy associations like the “Visegrad+ for Renewable Energy” platform<sup>141</sup> with corporations with renewable commitments like RE100 members.<sup>142</sup>

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<sup>139</sup> For in-depth recommendations on the next EU budget, see: E3G (2018). **An EU budget for climate action: accelerating the low-carbon transition in Central Eastern Europe** and E3G (2018). **Funding the just transition to a net zero economy in Europe: opportunities in the next EU budget**

<sup>140</sup> E3G (2019). **The Just Transition Fund: 4 benchmarks for success**

<sup>141</sup> E3G (2019). **Visegrad+ for renewable energy**

<sup>142</sup> RE100 (2020). **RE100 Overview**



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- > **Strengthen civil society organisations:** This requires increased financial support from European and national funding programmes like the European Climate Initiative (EUKI) of the German Environment Ministry. It is also crucial to build networks and support knowledge transfer and information flows between organisations, Brussels and capitals.
  - > **Support regions and municipalities:** Create the possibility of direct financial support to those regions and cities that have put in place sufficiently ambitious programmes to address climate change.



## Overview of the Political Economy Mapping Methodology (PEMM)

PEMM is an analytical tool developed by E3G to assess threats and opportunities to countries presented by the low carbon transition and sustainable development. It is a way of analysing and condensing a large, complex set of socioeconomic data to visualise and assess in-country real economy trade-offs. Its origin was to develop and game scenarios for UNFCCC climate negotiations, though it has been used for other purposes, such as supporting the development of advocacy strategies and coalition building. E3G has analysed over 25 countries in detail since 2010 and adapted the PEMM to address sub-national and broader sustainable development issues, such as biodiversity and land use.

The methodology offers a way of processing information in a transparent and consistent manner and creates comparability between countries. It also challenges assumptions and ‘group think’ through extensive review and stress-testing; provides judgement on critical issues to understand comparative risks and opportunities; and engages a range of different stakeholders from government, business, civil society and academia.

The goals of political economy mapping are to:

- 1. Analyse the discourse** around climate and energy issues and its importance in **specific national political-economy contexts**;
- 2. Expose key obstacles and tensions** in the economy and the political system;
- 3. Identify strategic opportunities** and national, as well as international, intervention points in each country.

The PEMM process is analytically robust, locally tested and iterative. The evidence-based methodology combs hard analytical data, covering over 280 indicators for each country collected through E3G's PEMM indicator database, with in-country testing and informed judgement.

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For each country, the PEMM methodology assess three core systems: National Conditions (trends in the real economy), Political System (actors involved in decision making) and External Projection and Choice (how a country positions itself externally).

PEMM seeks to answer the following research questions:

- > What are the core interests that shape the national debate around a low carbon transition in the country?
- > How are these national conditions affected by the country's political system?
- > How does the interaction between the country's economic and political systems play out in its external projection and choice?

**National conditions** refer to the trends observed in the real economy. Within the PEMM, there were six major areas assessed for their significance, maturity and role in shaping the national debate around a low carbon transition. These include climate risk, energy transition, energy security, technology and innovation, finance and investment and public goods.

**Political system** refers to the actors involved in a country's decision-making processes. Within the PEMM, there were three categories of political actors assessed for their level of influence and role in shaping the national debate around a low carbon transition: Government, business and public discourse.

**External projection and choice** refer to a country's external positioning and how it communicates its interests abroad. Within the PEMM, there were two aspects of external positioning that were assessed for their level of influence, maturity and role in shaping the debate around a low carbon transition: Climate diplomacy and foreign policy.

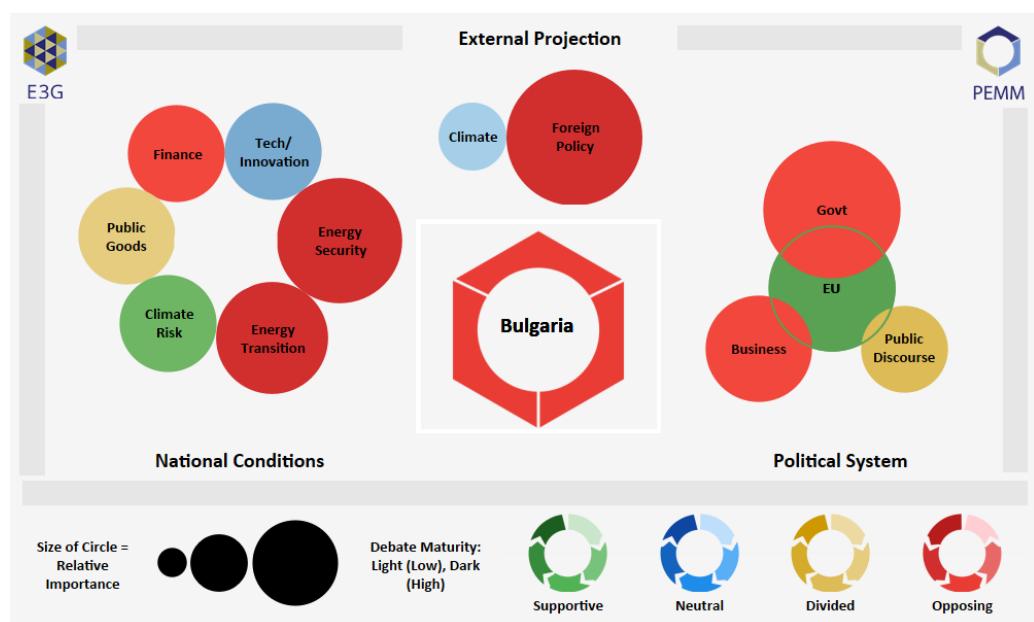


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## PEMM high-level summary visualisations

E3G has conducted the political economy mappings of the six countries studied in this paper between 2017 and 2019. The findings in the comparative analysis above have been updated to reflect recent developments. This annex includes the overview mappings included in the national assessments at the time of publication. In 2019, the PEMM methodology has been updated, which included a revision of the high-level summary visualisation layout. Therefore, the more recent visualisations for Bulgaria and Romania are provided in a different layout than those for the other countries.

### Bulgaria (2019)

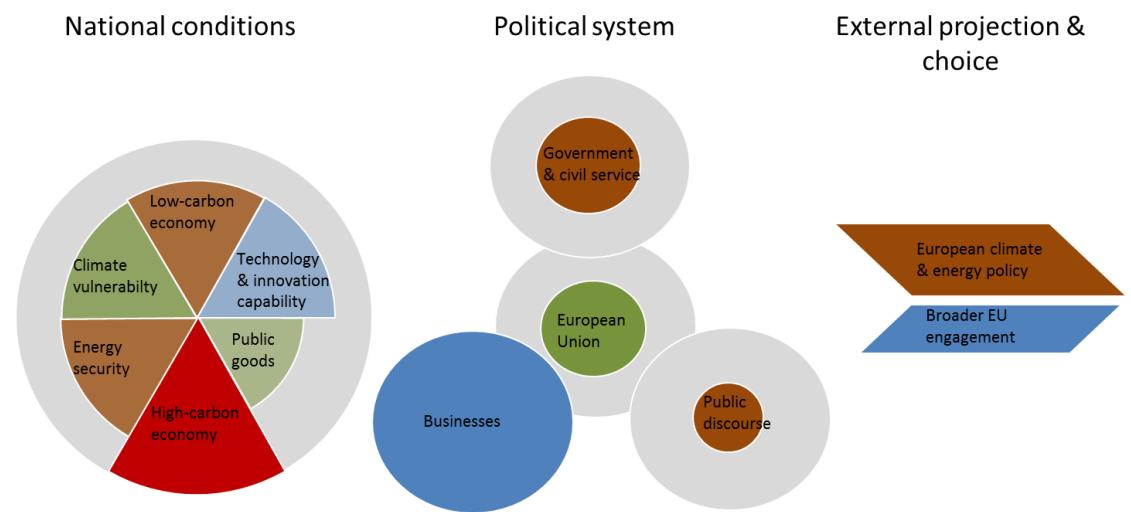


> [Read the full political economy mapping here.](#)



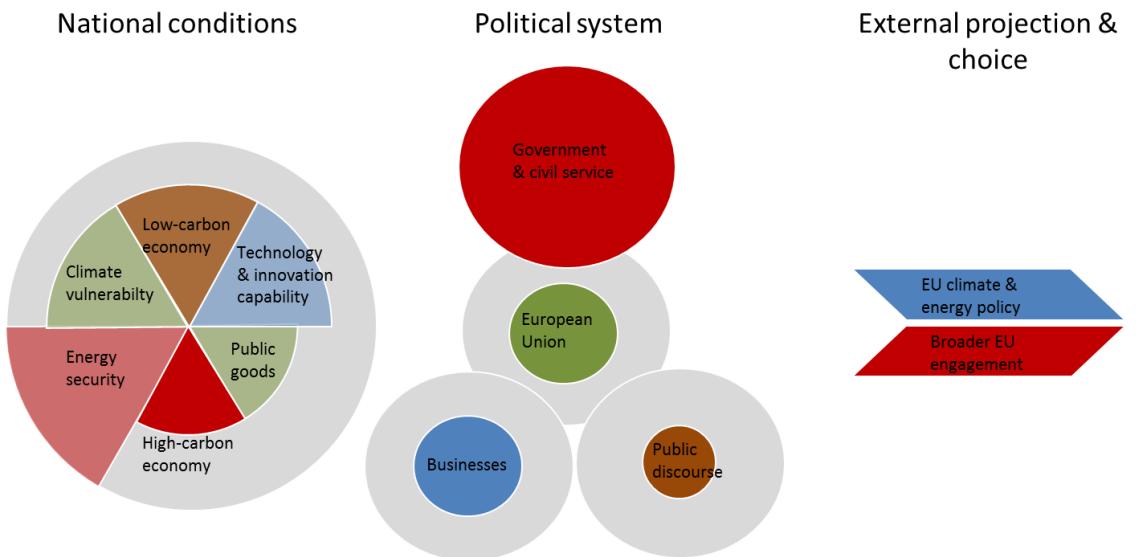
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## Czechia (2017)



> [Read the full political economy mapping here.](#)

## Hungary (2017)

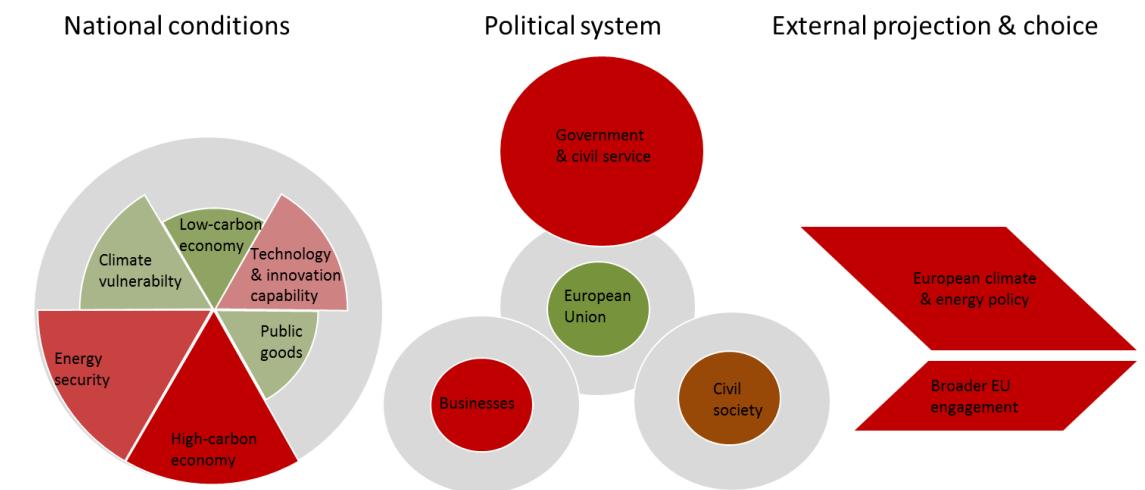


> [Read the full political economy mapping here.](#)



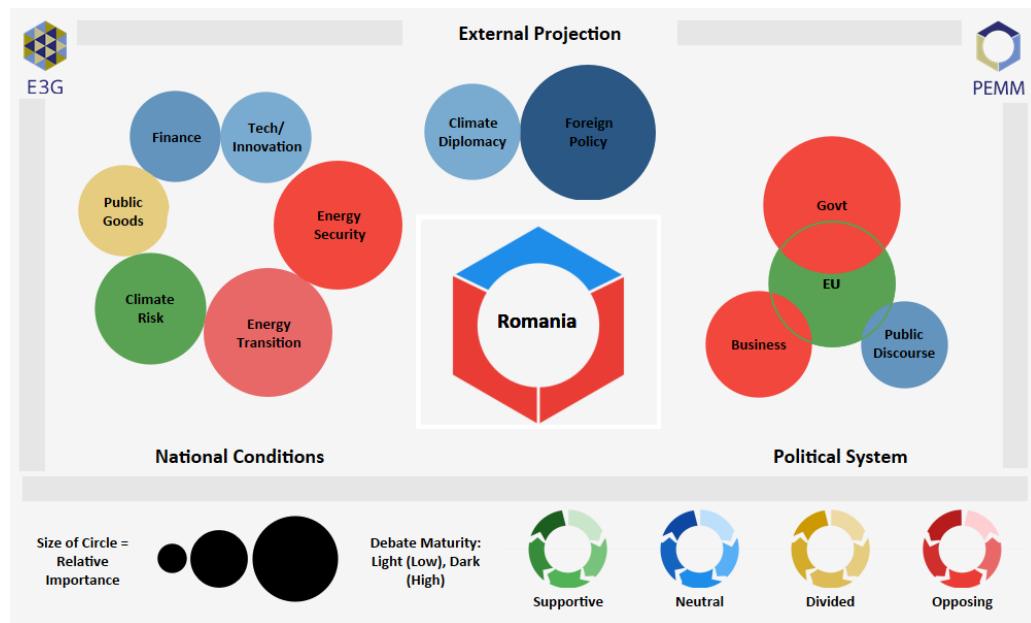
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## Poland (2017)



> [Read the full political economy mapping here.](#)

## Romania (2019)

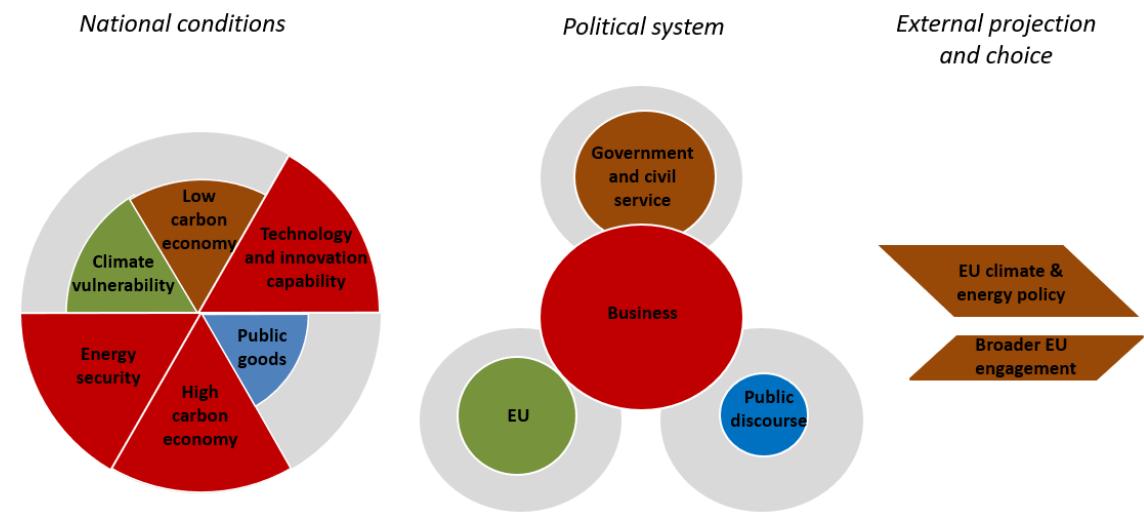


> [Read the full political economy mapping here.](#)



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## Slovakia (2018)



> [Read the full political economy mapping here.](#)