

Identifying short-term opportunities to align the Central European Energy Security with the 2030 European Green Deal goals in Czech Republic, Hungary and Slovakia

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Executive summary

The Russian invasion in Ukraine provided extra impetus to reach climate and energy goals in Europe. Given Central Europe's strong dependency on Russian energy sources, the question is to what extent the REPowerEU plan, European Green Deal and energy security are and can be aligned. Using consistent pre-Covid19 data this paper explores the short-term opportunities to align Central European energy security with its 2030 climate and energy goals.

For its total available energy, the EU imports 61 % and generates 39 % itself. Approximately one third of the imported energy (thus 20 % of its total) is imported from Russia. In chapter 1 it is discussed that Czech Republic, Slovakia and Hungary have a far above EU average high energy dependency on Russian coal, gas, oil and petroleum products as well as uranium. Chapter 2 reveals the most important European Green Deal legislation, the 2030 55 % CO₂-reduction target and how far Czech Republic (72 %), Hungary (65 %) and Slovakia (53 %) are already reaching those targets.

Chapter 3, 4 and 5 are dedicated sector specific attention areas, namely energy, buildings and transport. On energy, phasing out coal would reduce Czech Republic's CO₂-emissions by 21 %, in Hungary by 5 % and Slovakia 4 %. At the same, especially Czech Republic would be faced with an energy gap to fill one way or the other.

On buildings, we see that Russian natural gas is being heavily used to heat buildings in Central Europe. Buildings are responsible for approximately 40 % total EU's final energy consumption as well as 36 % of its total CO₂-emissions. Making buildings more energy efficient would reduce the energy demand for Russian gas, whilst advancing toward the 2030 goals: Slovakia's long-term building renovation already indicates a 17 % CO₂-reduction by 2030, mainly due to already planned disconnection from Russian gas and focus on energy efficiency.

On road transport, we observe that mainly Russian oil and petroleum products are used for road transport in Central Europe. Road transport is responsible for 30 % of the EU's total final energy consumption and 22 % of its total CO₂-emissions. It is explored how much accelerating the shift to CO₂-free road transport would help to align the several goals in the short-term. By exploring an ambitious 2030 scenario of having one tenth of the total road transport CO₂-free, it is concluded that the change would be relatively

minor (2 % less CO₂-emissions) and it would have especially impact for the long-term 2050 goals. Disconnecting from Russian oil and petroleum will be the most challenging for Central Europe if one prioritises CO₂-free solutions. Instead, other strategies such as diversifying the energy source are recommended in the short-term.

On finance, an overview is provided on the developments related to sustainable finance. We can expect several changes that would enable leveraging the abundant relevant finances with both the public and private sector. An overview of several sources of funding is provided to showcase the potential to spearhead the identified short-term opportunities for Central Europe to align its energy security with its 2030 low carbon pathways.

Foreword



The French diplomat Jean Monnet, an architect of the European Union (EU), once said “Europe will be forged in crises” and his thinking is being proven right, one crisis at a time. Each crisis after the 2008-2009 Great Financial Crisis, has been unique and was

not foreseen. Each forced governments and policymakers to think on their toes and fast track measures, until then thought unthinkable.

We’ve seen it not long ago with the pandemic that returned massive fiscal packages by any historical standards, as well as the first joint fiscal instrument. The Stability and Growth Pact fiscal rules were switched off and remain so.

The large-scale Russian aggression in Ukraine – first and foremost a grave human tragedy – brings out skeletons from EU’s closet, spearheaded by energy security. The Nord Stream II gas pipeline backed by Germany that was to bring even more Russian gas to Europe is a case in point; luckily one that was scrapped as soon as Russia violated basic international law principles and infringed upon Ukrainian right to self-determination and sovereignty.

But it won’t undo the fact that Europe – and the asymmetrically dependent region of Central and Eastern Europe – have wasted the near zero interest decade following the 2008-2009 GFC, when it comes to its energy security and the transition toward green growth. There is no time to ‘take our time’ where at our borders, Ukrainians are paying with their blood, sweat and tears for our shared values of liberal democracy.

On the one hand, the Western allies make a strong point to wean of off it to cut off Putin from revenues necessary to run the war. On the other hand, Europe is unable to get behind such a bold move because of its dependency. It’s managed to phase out coal that’s the dirtiest fossil fuel, cheap, and replaceable. But the oil embargo has been trying Europe in a very big way, and a natural gas embargo is not even on the negotiation table for the continent!

In the meantime, Russia is also weaponizing its energy. A few weeks back, it has cut off Bulgaria and Poland from its natural gas but it was not a real loss for Russia, since these countries’ Gazprom contracts were about to expire and they wouldn’t renew anyway. It had a signalling value if anything, and was sent to sow discord. The bottom line is that it remains Putin’s key bargaining chip against Europe and a tool to divide and conquer.

The ground zero for Europe’s energy security strategy – that comes even before the more material points on infrastructure, alternatives, energy efficiency – should be, to stay united no matter what. Beyond that, the current report walks the reader in a very digestible way through some of the crucial considerations and material steps that the Bloc can take to pivot away from Russian energy imports.

It is high time and it will not be painless for citizens and costless for our economies, but done it must be. To educate the public and gain its backing (at least in part), policymakers, the media, and experts must explain, explain, explain on all platforms possible. Even the most bullet proof of strategies won’t work unless it is accompanied by a smart and pre-emptive communication campaign.

I wish us all lots of energy to complete the energy transition at this short schedule. I also wish you productive discussions and loads creative ideas at 2022 GLOBSEC Forum. The world needs you now more than ever!

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Soňa Muzikářová'.

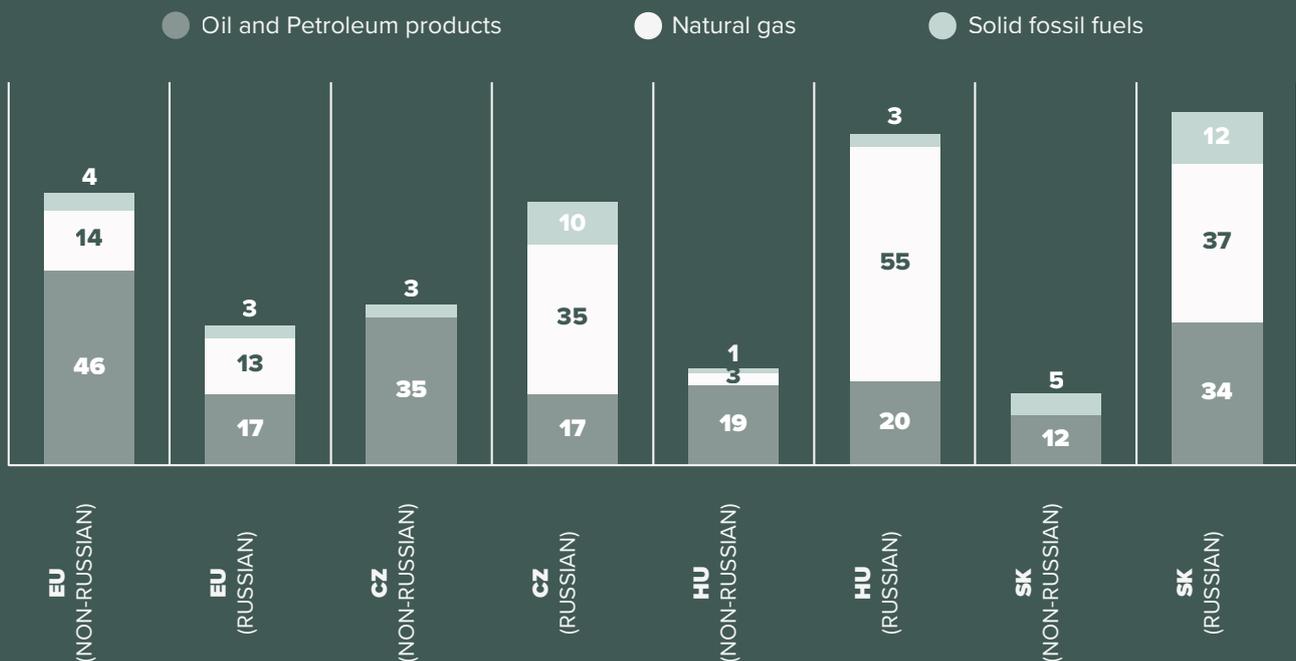
Soňa Muzikářová,
Chief Economist and Policy Director, GLOBSEC

1 Aligning EU's Energy Security and the European Green Deal

Disbelief, grief, outrage: the world was shocked that Russia invaded Ukraine with such unparalleled aggression in our 21st century. Joseph Borrel, EU's High Representative for Foreign and Security Policy, painfully estimated that the EU is spending approximately € 1 billion on Russian fossil fuels per day, which indirectly and unintendedly injects the Russian warmongering state apparatus. Never before has the EU realised on such a personal level that geopolitics and energy security are at the same side of the coin as European Green Deal goals related to energy independency, renewable energy supply and energy efficiency. Never before in the EU has there been such momentum to disconnect from Russian energy supply and advance sustainable solutions.

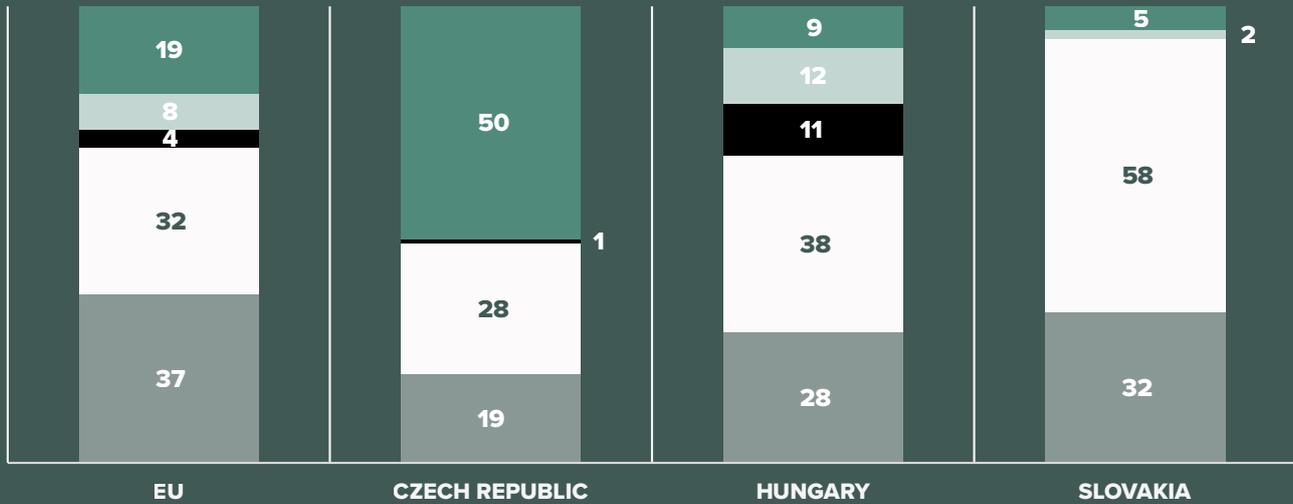
According to the statistics of the European Energy Agency, the EU imports approximately 61 % of its available energy sources, and produces 39 % itself (EEA, 2019). The imported energy is almost exclusively constituted by fossil fuels. Approximately 33 % of the imported energy comes from Russia (thus: about 20 % of the total available energy sources). For the CEE-countries this energy dependency is far higher. As can be seen in the graph below, Czech Republic imports approximately 62 % of its energy from Russia, Hungary even exceeds this with 78 % and Slovakia ends up at a staggering 83 %. Of the three energy sources, the largest dependency of the three EU-countries is Russian gas, mainly used for heating buildings, as we shall see in one of the dedicated chapters later.

SOURCES IMPORTS ENERGY SUPPLY IN % (EEA, 2019)



SOURCES PRIMARY ENERGY PRODUCTION IN %

● Renewable ● Nuclear ● Oil & Petroleum Products ● Natural gas ● Solid Fossil Fuel



Furthermore, if we look at the 39 % energy production side (EEA, 2019), we reveal another energy dependency: uranium. Czech Republic, Hungary and Slovakia have a large share of nuclear energy in its production, mainly using enriched uranium from Russia. Even though Russia has approximately 8 % of the world's known uranium resources, it is responsible for 20 % of the total supply to the EU. This is likely influenced by the fact that Russia has 35 % of the world's capacity to enrich uranium, which can be used for nuclear reactors. We will provide a few suggestions in one of the dedicated chapters on how to reduce the Russian dependency here.

The key question of this report is how to disconnect from the Russian energy supply, and how this can efficiently align with the goals of the European Green Deal. Therefore, in the next chapter we will start with an overview on the European Green Deal and its most important intermediate 2030 goals. In the ensuing chapters we will zoom in on the most important sectors that use fossil fuels (energy, buildings and transport), and propose quick wins on how to disconnect and refocus. Moreover, we will then look at the financial instruments available to accelerate the required changes in the aforementioned sectors. Finally, we will provide holistic policy recommendations for the three studied countries, to accelerate a carbon-neutral, energy independent Central Europe.

2 European Green Deal: Distinguishing short-term 2030 and long-term 2050 plans

The willingness and necessity of European climate action has gradually and incrementally increased in the last few years. After committing to the legally binding 2015 Paris Agreement at COP21, the EU followed up with their own innovative growth strategy bundled in the 2019 European Green Deal, which expresses the ambition and roadmap to be a climate-neutral continent in 2050.

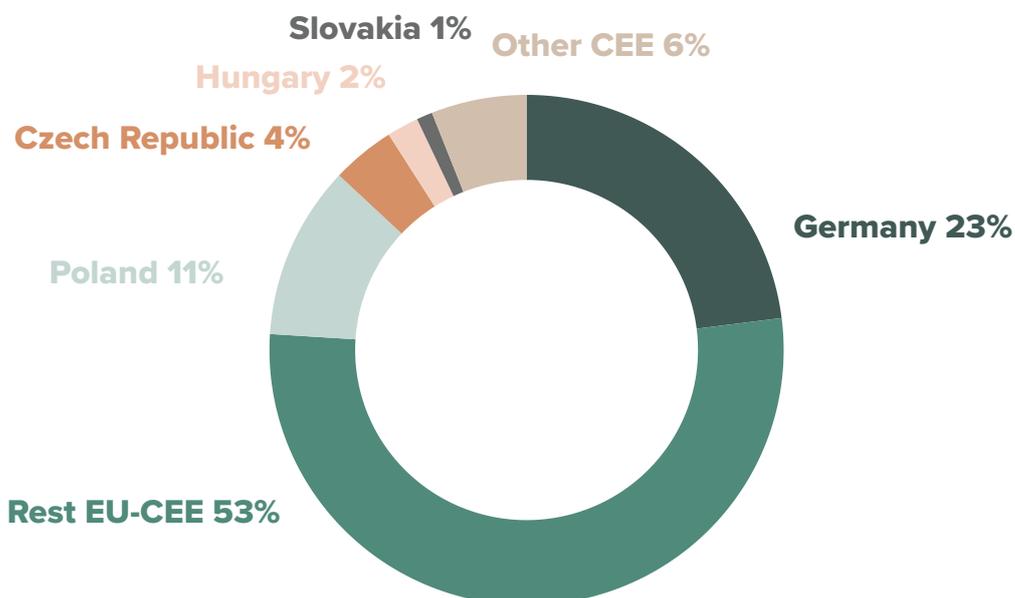
Within the framework of the European Green Deal, there is a plethora of new regulations, directives and strategies adopted, discussed and planned. These range from sector-specific solutions such as promoting uptake of electric vehicles and shifting to renewable energy sources, to embedding concept-driven ideas such as embracing the holistic circular economy and farm-

to-fork strategy. There are three key intermediate targets in 2030, which is only 8 years from now:

- ▶ Cut CO₂- emissions by 55 % from the 1990 level;
- ▶ Increase share renewable energy of the final energy consumption to 32 % (in 2021 the Commission proposed to increase this to 40 %, and maybe even further to 45 %);
- ▶ Increase energy efficiency of primary and final energy consumption by 32.5 % from the 2005 level (in 2021 the Commission proposed to increase this to 36-39 %).

This paper focuses on the Central European countries Czech Republic, Slovakia and Hungary.

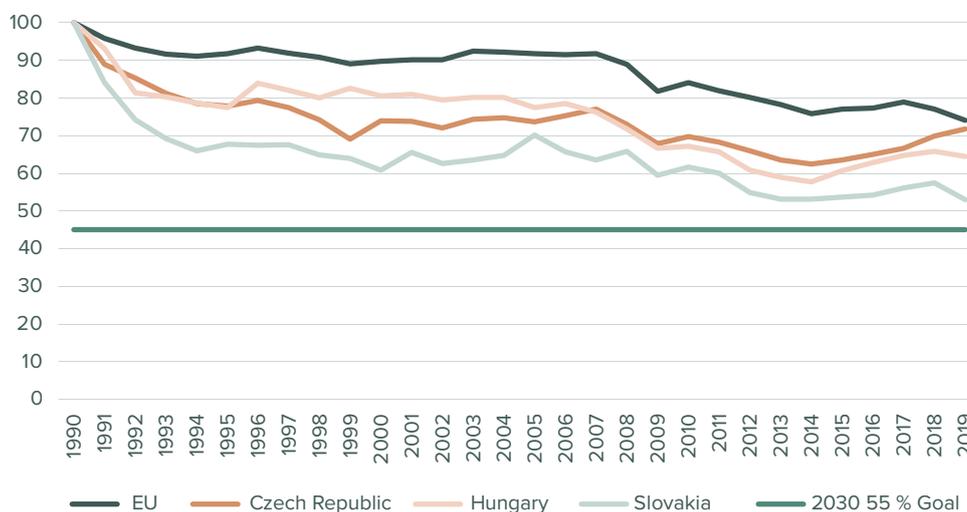
Total CEE GHG Emissions in kt CO₂ equivalent (EEA, 2019)



The graph below reveals the overall CO₂-reduction potential of Czech Republic, Slovakia and Hungary. The CEE-region (11 countries) is accountable for approximately 24 % of the CO₂ emissions (with Poland 11 %, and the combination of Czech Republic, Hungary and Slovakia 7 %)

flows of the sector more closely. Furthermore, the EU also already requires institutional investors and aims for large business corporations to report and disclose sustainable investments (further discussed in chapter 6 on Sustainable Finance). By doing so, sustainable plans are

Index development in emissions (EEA, 2019)



and the rest of the EU 76 % (16 countries, with Germany alone emitting almost the same as the CEE-region combined). We shall see in the next chapter focusing on the energy sector that the emissions largely come from the final consumption of the imported fossil fuels from Russia.

The key target to focus on is the 55 % reduction target by 2030. EU's 2019 level was at 74.1 %, Czech Republic at 71.8 %, Hungary at 64.5 % and Slovakia at 53 %. Slovakia is already close to reaching their 2030 target, but all countries are faced with the challenge of how to reach their 2030 target, while disconnecting from Russian energy supply and filling in the ensuing energy gap. The question is to what extent the studied countries should prioritise the increase of renewable energy or energy efficiency measures, as per the other EU targets. We will look at this more closely in the next chapters.

It is worth mentioning that the European finance sector is being prepared to support the required changes for 2030 and 2050. Namely, to stimulate channelling of finances for the implementation of concrete sustainable plans, the EU also developed the technical EU Taxonomy which defines sustainability. Furthermore, there defined sustainability targets within its 7-year multi-annual Financial Framework (MFF) budget and the EU Recovery and Resilience Facility (RRF), as well as it recently enlarged the mandate of the European Central Bank to monitor sustainable financial

supposed to receive sustainable financing from all stakeholders, which would support the common aim to reach EU's 2030 and 2050 climate and energy goals. Therefore, clarity on priorities seems to be particularly well-timed.

This brings us to the final point of this chapter. The daunting task of becoming carbon-neutral seems to be blurred by challenges like perhaps too many priorities and ideas, which hamper the required concrete action for 2030 or even sooner, considering the Ukrainian war and added urgency to disconnect from Russian fossil fuels. Therefore, this report aims to provide what are the low-hanging fruit investments to reach the 2030 targets sooner and distinguishes short-term 2030 with long-term 2050 plans and investment opportunities, for example filling in the energy gap after closing coal plants versus investing in a green hydrogen infrastructure. Namely, relevant financing is available for the discussed sectors, but more clarity seems to be helpful on how to leverage this efficiently. It should be stated upfront that this report does not argue that we should postpone all long-term plans only until after 2030, nor that there are other efficient 2030 plans. It rather aims to provide clarity and the most obvious focus for 2030 and sooner, by mapping low-hanging fruit opportunities, which, in turn, could identify the level of urgency and sequence of priorities for both 2030 and 2050. In the next chapter we focus on energy transition, which is the essence of reaching the energy and climate goals.

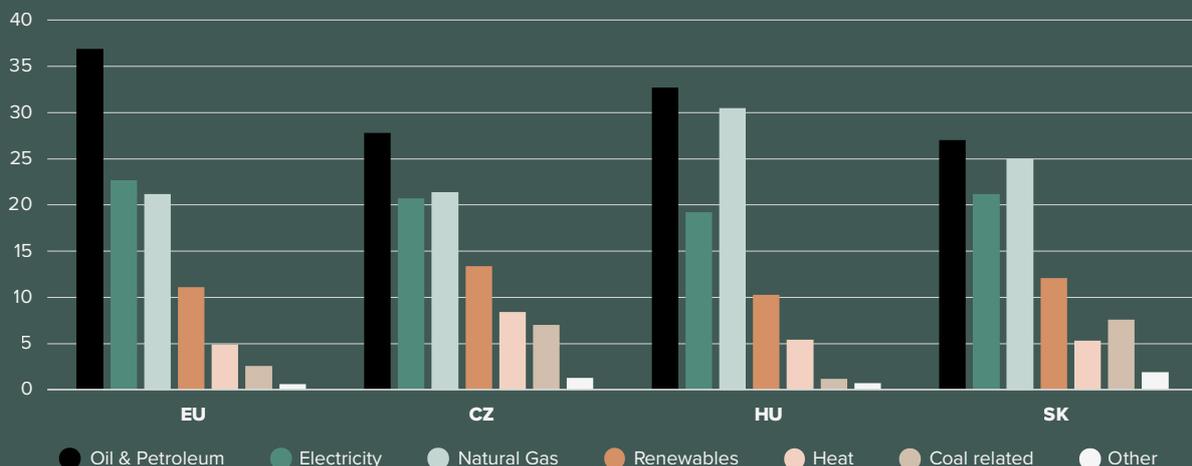
3 Energy Transition - filling in the energy gap, coal and a mixed picture for Central Europe

EU energy transition is the foundation to reach the 2030 and 2050 climate and energy goals. Energy consumption via factories, mobility, houses, devices et cetera can adapt and tune into a green energy supply. Therefore, it is vital that the energy sector moves towards CO2-free energy sources, and as we have seen it would limit the dependency on Russian energy supply. However, this transition is easier said than done. Namely, we already concluded that 61 % of the available energy sources are imported and are almost exclusively fossil fuels that have to be changed somehow. Additional questions arose in the previous two chapters: to what extent is Russian uranium jeopardising the nuclear energy share and what to do in case it is? How to fill in the energy gap if we cut the usage of fossil fuels?

To answer these questions, it is helpful to focus on final energy consumption, as both the EU Energy Efficiency Directive and Renewable Energy Directive use this as their unit of analysis. It means that the aforementioned available energy sources (based on national production and international

imports) are actually used by end consumers in particular sectors, minus transmission losses or usage of energy in the energy sector itself. The graph below shows the dependency on oil and petroleum products in general, but also the above average dependency on (read: Russian) natural gas in Czech Republic, Slovakia and Hungary. Additionally, the yellow electricity bar in the graph below is mainly constituted by transformed nuclear energy and coal in the studied countries. In 2019, approximately one fifth of the final energy consumption was electricity (CZ: 21 %; SK: 21 %; HU: 19 %), of which transformed coal (CZ: 43 %; SK: 10 %; HU: 12 %) and nuclear energy (CZ: 35 %; SK: 54 %; HU: 48 %) constituted the largest share. For the red heat bar in the graph below there was no similar exact data to be found, but the expectation is that it can be largely ascribed to coal and nuclear energy as well. All in all, this breakdown of energy helps us to analyse what the energy gap will be in case one or another energy source will be reduced entirely, for geopolitical and European Green Deal purposes.

Final energy consumption per energy source in % (EEA, 2019)



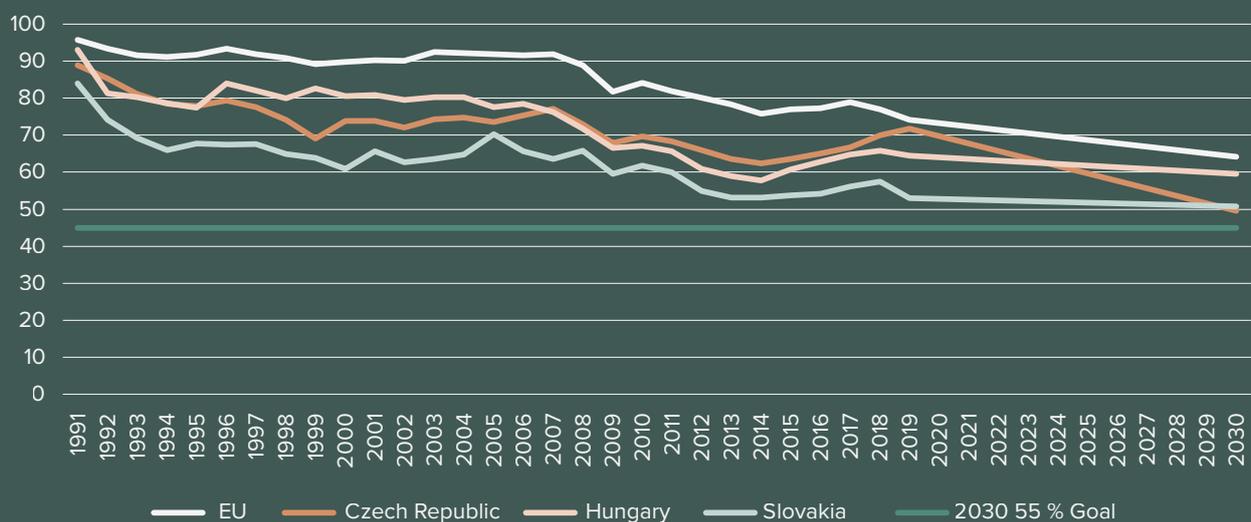
There are at least five characteristic challenges for the countries to align with the 2030 goals. Firstly, the high dependency on Russian energy sources as concluded before. Secondly, there is the issue of the energy gap. Cutting CO₂-intensive energy sources such as closing all coal plants following EU's 2030 commitment as part of the 2015 Paris Agreement would reduce the energy supply, which needs to be substituted by other CO₂-free energy sources somehow. Thirdly, shifting to new energy sources requires at least two types of investments: new energy supply solutions such as solar panels and upgrading the grid to accommodate the demand. Additionally, for some new energy sources such as green hydrogen an entire new distribution infrastructure is required on top of that. The latter seems to be more a long-term 2050 investment and thus difficult to achieve by 2030. Fourthly, the three Central European countries are landlocked in the centre of Europe, which means that they have less geographical comparative advantages like North European seacoast countries shifting to off-shore wind parks and sun-abundant Southern European countries shifting to solar panel solutions. This means it will be extra challenging for the three countries to fill in the energy gap with one renewable energy source like solar or wind, so a mix of more green sources seems logical in the short run. Finally, the grid can be significantly modernised to improve energy efficiency via distributed energy, microgrids and smart grids (among which across borders in the region).

On energy security, in light of reducing the Central European dependency on Russian energy sources, one could choose to fill in this potential energy gap by getting the same energy sources from different countries. For example, for uranium one could turn to more NATO-friendly countries such as

Australia and Canada that already represent 13 % and 18 % of the total uranium supply source to the EU in 2020. Furthermore, instead of Russia, other European and NATO-countries such as Germany, United Kingdom, France and the Netherlands have facilities that can enrich uranium for energy usage as well, in case developing capacity and expertise in Central Europe itself is not optional. Even so, uranium is not targeted so far in the REPowerEU plan, but in the short and medium turn nuclear energy has a key place in the energy mix for the Central European countries as it does not emit CO₂ unlike the other energy sources that have to be diversified or replaced so urgently.

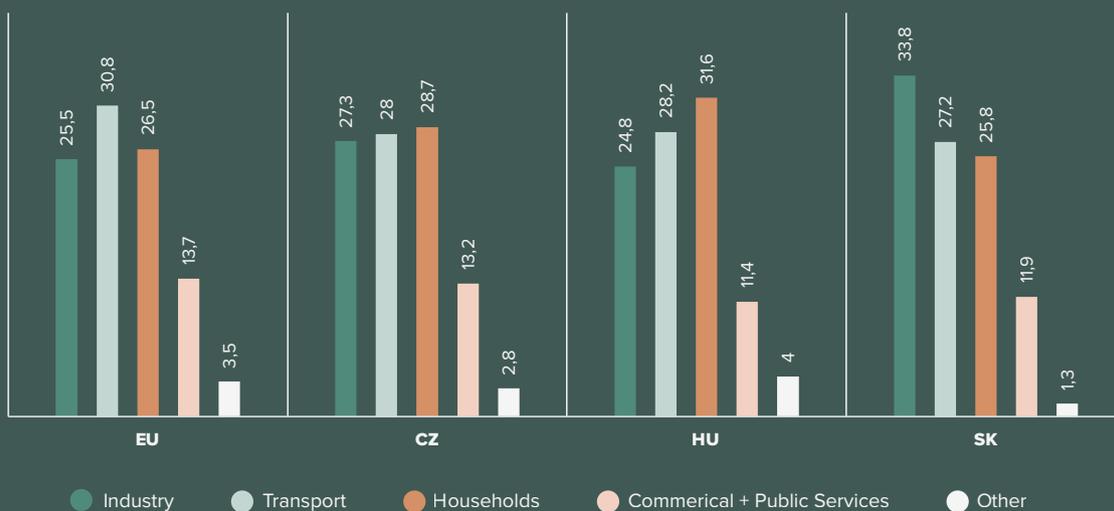
On aligning energy security with the European Green Deal in the short term, the key low hanging fruit is phasing out coal plants by 2030, which would also follow the EU's 2015 Paris Agreement commitment. Hungary and Slovakia already announced they will be coal-power free in 2025 and 2030 respectively. Early 2022, Czech Republic committed to 2032/33, but this was still before the Russian invasion in Ukraine. Should all three countries reach their commitments in 2030, the three countries would almost reach their 2030 target, on the condition the alternative energy source will be CO₂-free or that there will be a strong focus on reducing energy consumption via efficiency measures. According to Eurostat (2019), the estimated energy gap (loss of gross energy supply) after omitting coal from the energy supply is for Czech Republic 165.159 GWH (33 % of its total), for Hungary 21.852 GWH (6.9 %), and for Slovakia 31.749 GWH (16 %), but it would reduce 21 % (CZ), 5 % (HU) and 4 (SK) of the carbon-footprint according to the database of Beyond Coal (2022). The graph below depicts the progress towards the 2030 target.

**Index development in emissions after using no coal in 2030
(EEA, 2019; Beyond Coal, 2022)**



Finally, we discussed that the final energy consumption is used one way or the other. The graph below using Eurostat (2019) statistics shows the energy consumption per category. It reveals that industry, transport and buildings are the largest energy consuming entities. It is remarkable that the consumption in the yellow category “commercial + public services” below is heavily dominated by commercial and public buildings, which means that buildings (including the residential buildings from the category households) are responsible for approximately 40 % of the final energy consumption in the EU, and 36 % of the CO2-emissions (EC, 2020). In the next chapter we will discuss why and how focusing on buildings is one of the most vital focus points to reach the 2030 targets while improving the Central European energy security.

FINAL ENERGY CONSUMPTION IN % (EUROSTAT, 2019)

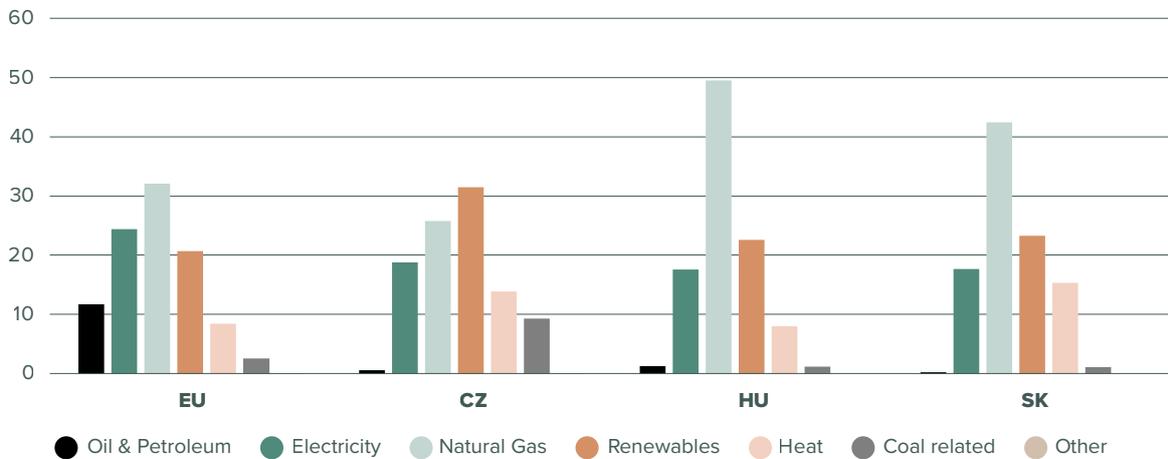


4 Buildings - Russian gas and the crucial case for energy efficiency

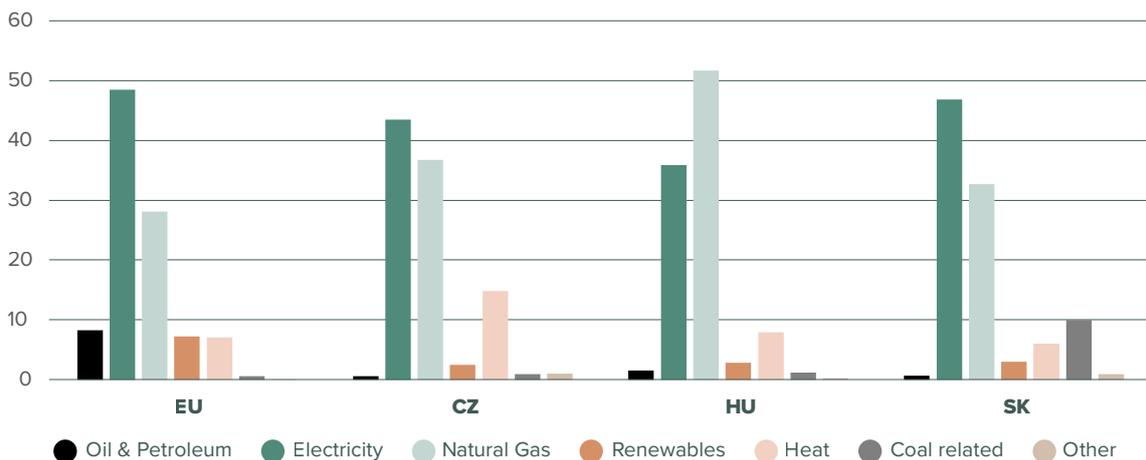
The previous chapter mentioned that buildings approximately 40 % of the final energy consumption in the EU and 36 % of the CO₂-emissions (European Commission, 2020), with residential buildings using approximately 27 % and public and commercial buildings approximately 13 %. We can break down the exact energy sources of the residential, commercial and public buildings in the next two graphs. There are a few noteworthy observations to be made here. Firstly, especially

Hungary and Slovakia have a far above EU-average usage of natural gas to heat buildings. Czech Republic uses 57 % of the total natural gas supply for heating buildings, Hungary 71 % and Slovakia 59 %. We concluded in a previous chapter this concerns almost 100 % Russian gas. Secondly, and this is a general European trend, renewable energy sources are hardly used in commercial and public buildings, in contrast to residential buildings.

Final energy consumption households per energy source in % (EEA, 2019)



Final energy consumption commercial and public services, per energy source in % (EEA, 2019)



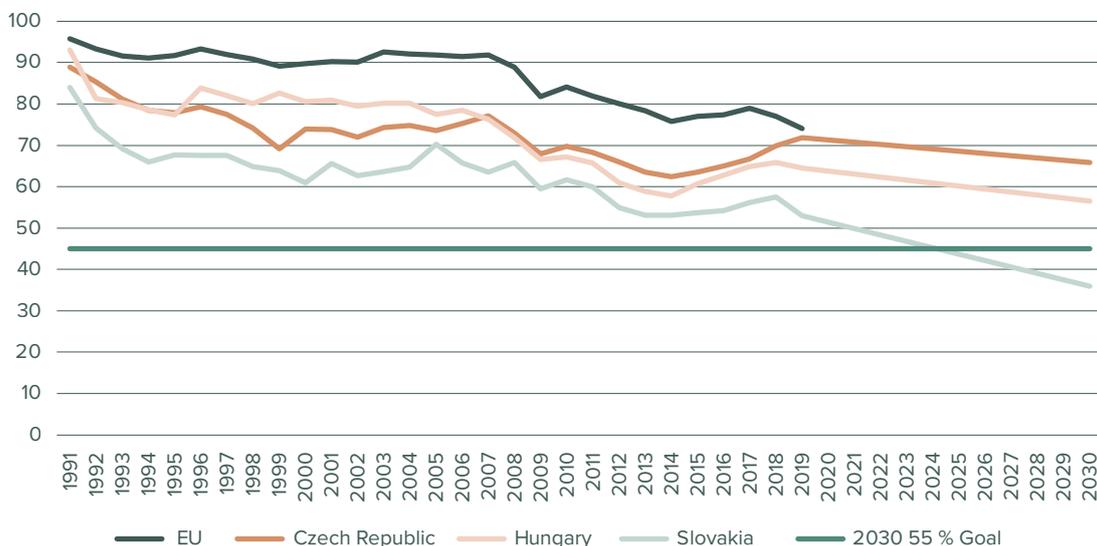
Renovating existing buildings to reduce energy demand is one of the most penetrating low hanging fruits to reach the 2030 goals. Namely, by making buildings more energy efficient, you invest once to win four times: the value of mortgages go up, the energy bill goes down, Russian energy dependency reduces, whilst reducing the CO₂-emissions. Furthermore, it is one of the most direct, social and sustainable solutions to focus on as every citizen lives in a building and therefore could noticeably reap the benefits already. Additionally, by ensuring that new buildings have the highest energy efficiency standards, no new problems are created, and the existing building stock can be improved gradually and parallelly. Moreover, renovating buildings in Central Europe seems less complex from an administrative point of view consider its higher percentage of home ownership: in contrast to the EU average of 70 %, Czech Republic (78.6 %), Hungary (91.7%) and Slovakia (90.9%) have characteristic statistics (Eurostat, 2019). Finally, prioritising building renovation aligns with the 2019 EU Clean Energy Package and aforementioned Energy Efficiency Directive, which includes an energy efficiency target of at least 32.5 % by 2030, as well as the recently proposed revision of the Energy Performance of Buildings Directive (EPDB) that every public and non-residential building in 2030 should have energy class E and every residential building energy class F in 2030 and E in 2033.

Renovating a building is a step-by-step approach: one starts with energy efficiency solutions (i.e. lighting, insulation, windows) before shifting to renewable energy sources (i.e. solar panels, heat pumps). Namely, a building with energy class G consumes 10 times more energy than a nearly-zero energy building (NZEB) and moving from

G to C already saves two thirds of the energy usage. Conversely, should one start renovating with renewable energy sources like solar panels instead, one would thus need 10 times more solar panels on its roof. These are unnecessary efforts and costs that can easily be avoided. Additionally, in contrast to shifting to renewable energy sources such as solar panels, no additional required grid investments are needed. Energy efficiency solutions have the best value-for-money ratio to reduce CO₂-output, also according to this 2018 Dutch study, and are the obvious low hanging fruit for building renovation.

Looking into the submitted 2020 Long Term Building Renovation (LTBR) plans from Czech Republic, Hungary and Slovakia we notice a few self-declared targets from the Member States. Firstly, Czech Republic reveals that their building stock is responsible for 44 % of its total CO₂-emissions. They want to reduce the emissions of buildings by 40 % in 2050, bringing its total contribution down to 26 %. In case this goal is reached linearly, this would be a 6 % total reduction by 2030. Secondly, Hungary has a 2050 goal of having 90 % NZEB buildings, with intermediate 2030 targets to increase the energy savings with 20 % and reduce CO₂-emissions of buildings with 18 % (8 % total), and in 2040 with 60 %. Finally, Slovakia reveals that their building stock is responsible for 28 % of its total CO₂-emissions. It aims for 40 % energy savings by 2050 and 87 % reduction of CO₂-emissions in buildings, with an intermediate 2030 target of 61%; they showcase a strong focus on energy efficiency, reducing gas and boosting other energy sources. Slovakia appears to have the most ambitious plan, as this would reduce their CO₂-emissions by 17.1 %, far succeeding its 2030 goal.

**Index development in emissions after building renovation in 2030
(EEA, 2019; LTBR Plans, 2020)**



Even so, it is recommended that the countries build a transparent energy performance certificate database that is linked to the cadastre registry, which seems to be missing in all strategies. If we have this energy label system for the entire building stock overview published annually, we can transparently monitor the greening progress of reducing the emittances per category. It could be helpful if there is an homogenous approach across the EU member states. Also, it might motivate commercial and public entities to green their buildings, because this becomes increasingly more important under the pressure of the new EU non-financial disclosure obligations, such as the Corporate Sustainability Reporting Directive (CSRD) for large companies, or Sustainable Finance Disclosure Regulation (SFDR) focused on financial market participants. In both cases, the legislation will require certain companies and financial institutions to provide information on how they manage the social and environmental aspects of their operations, also linked to emissions scopes 1 and 2. We come back to this in the chapter after the next one about road transport.

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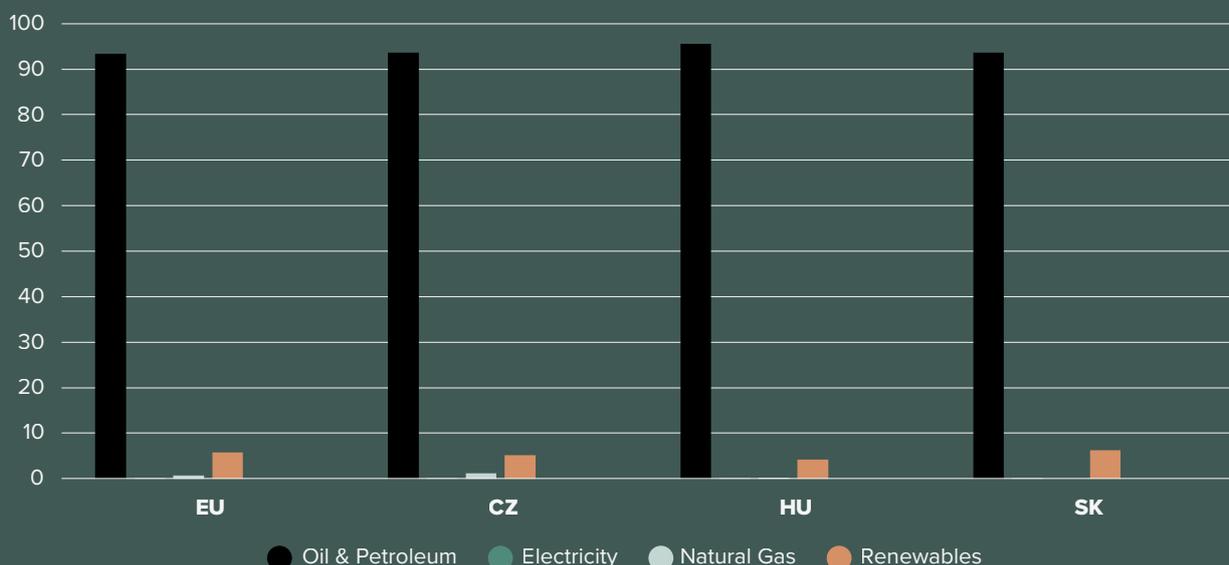
Road transport - Russian oil and slowly but steadily greening the fleet towards 2050

Transport is responsible for 22 % of the EU CO₂-output and 30 % of our final energy consumption (Transport & Environment, 2019; EEA, 2019), with passenger cars being the biggest contributor to this total output (16 %). Given the fact that the European automotive sector provides jobs to 13.8 million Europeans (6.1% total EU employment), greening our cars will not only reduce the CO₂-emissions and improve the air quality, but also affect the sector and could entail ample opportunities for the new green economy and society. In fact, Central Europe has some of the leading car manufacturing European countries, with an industry output of 26 % (CZ), 29 % (HU) and 44 % (SK) respectively, annually producing almost 3 million cars combined (sources: SARIO, HIPA, Czech Invest). That having mentioned, this chapter will focus on boosting the consumer market. We can see in the graph below on final energy consumption that road transport is largely about using petrol based on the significant indirect share of Russian oil, which adds added reasons for greening our cars.

The CO₂-output of road transport is in Czech Republic 21 %, Hungary 22 % and Slovakia 18 % (9.3 % passenger cars). Focusing on passenger cars, there are approximately 6 million in Czech Republic, 4 million in Hungary and 2.5 million in Slovakia. The share of electricity in the final energy consumption of the graph above is around 0.1 % for all countries, which already reveals the low number of electric vehicles (EVs) and plug-in hybrids. For example, at the end of 2021, of the 2.5 million passenger cars, Slovakia has about 4.000 EVs and 4.000 plug-in hybrids.

Promoting EV-uptake in the three countries faces a few hurdles. Firstly, there is the well-known chicken and egg hurdle: in order to purchase an EV, one should have plenty of charging points, but why would one place charging points if there are no EVs? There are currently approximately 235.000 charging points in Europe, of which almost 65.000 in the Netherlands, but only 400 in Czech Republic, 2.000 in Hungary and 1.000 in Slovakia. Placing charging points means investing and extending the

Final energy consumption road transport per energy source in % (EEA, 2019)



grid, which entails creating green corridors across the country and the region. Secondly, without greening the electricity supply like phasing out coal and boosting the renewable energy share, there is little CO₂-reduction. Therefore, e-mobility is dependent on a green energy transition strategy, because only with green electricity EVs and hybrids can reduce the CO₂-emissions. Thirdly, EVs are currently generally more expensive than combustion cars, whereas the purchasing power in the three countries is lower than in fast-moving countries like Germany and the Netherlands. There is a risk that combustion cars from these fast-moving countries will be sold for cheap prices in the three countries, which would block placing new, plenty of charging points and, in turn, further slow down the EV uptake.

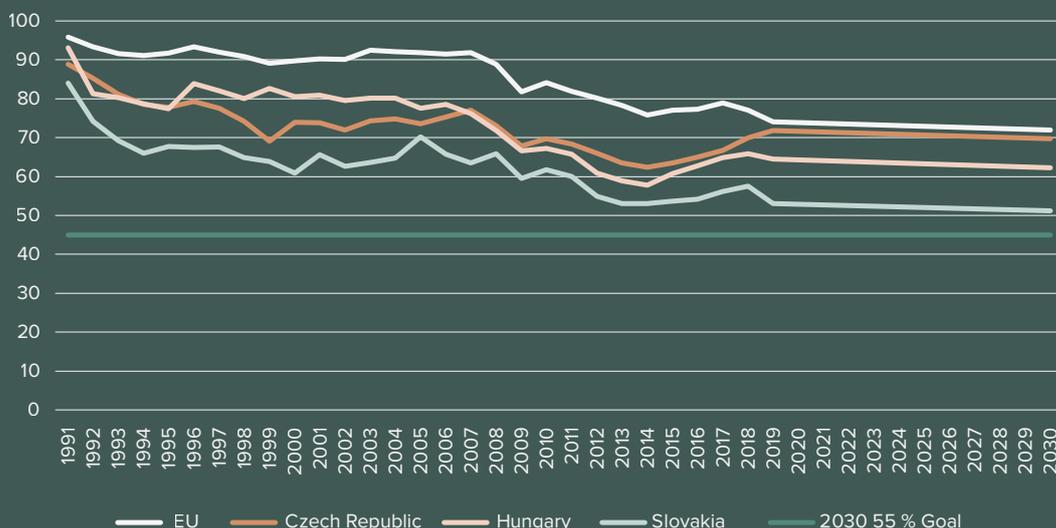
The low hanging fruit for passenger cars is to stimulate the EV market in the three countries with a two-approach due to the chicken and egg hurdle. Regarding having more EVs, we have to consider that approximately 60 % of the passenger cars are so-called fleets. Leasing companies but also organisations such as the public and private sector have better car deals, of which also employees can benefit and purchase a leased car from the company. To use this effect, by bulk buying EVs and plug-in hybrids (perhaps even second-hand), we can increase the EV uptake in a cheaper way, whilst guaranteeing placing sufficient charging points. This could also become increasingly more important given the aforementioned developments related to sustainability reporting legislation, such as the aforementioned CSRD and SFDR. Furthermore, regarding having more charging points, it makes more sense to place more charging points at supermarkets, residential, public and office buildings. This would entail less grid investments than placing too many

alongside highways, a high utilisation rate (about 15 % nearby supermarkets), plus the charging prize would be less - especially at home.

It is difficult to predict the share of EVs by 2030, and some of the reasons are already mentioned. It is expected that there are kick-start solutions for the chicken and egg hurdle to boost the market and that EVs will get cheaper. This entails an exponential growth of the market, but the question is how exponential. The Slovak Electric Vehicle Association (SEVA) goes as far as indicating that a realistic scenario could be to have 30.000 EVs in Slovakia by 2025, from 4.000 now.

Let us extend this prognosis and imagine an ambitious scenario that by 2030 one tenth of all Slovak road transport is electric and would be using green electricity instead of petrol. For Slovakia this would mean that they require 250.000 EVs and plug-in hybrids in the passenger cars category (let alone buses and trucks), plus fill in the energy gap that coal leaves behind with CO₂-free alternatives. This would reduce the CO₂-emissions in road transport by approximately 2 % in 2030. From this thought experiment, one can conclude that boosting the EV market contributes relatively little to the 2030 CO₂-reduction goals, as can be seen in the graph below. However, given the fact that the average lifespan of a vehicle is between 12 and 14 years, it seems that boosting the EV market during the 2020s will be especially essential to reach the 2050 goals and would significantly reduce CO₂-emissions in the long-term. Finally, from a Russian energy dependency perspective, oil and petroleum products are arguably the most difficult fossil fuel to cut quickly given the large share of combustion cars, so diversifying the source of this energy supply would be advised in the short term.

Index development in emissions after boosting EV market by 2030 (EEA, 2019)

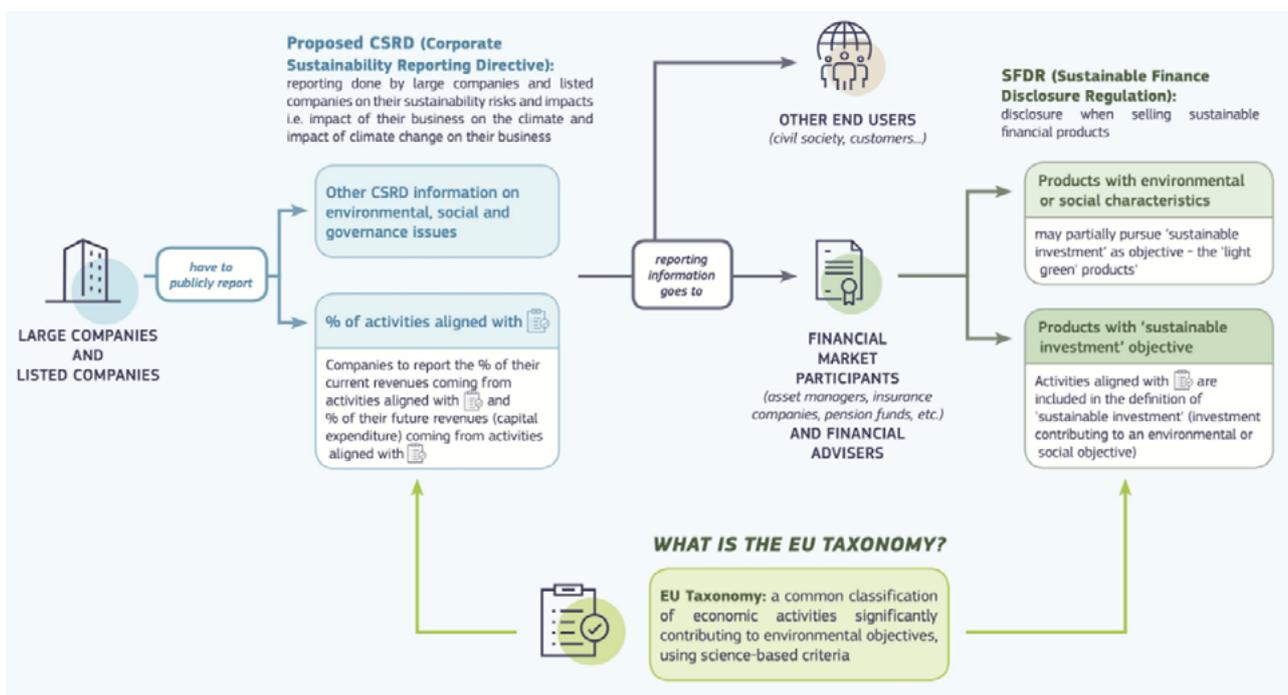


6 Sustainable Finance

The European Commission recognises the tremendous effort needed to decarbonise its economy and the fact that unprecedented amounts of both public and private capital will need to be re-oriented towards sustainable projects aligned with the EU Green Deal. As a response, the Commission developed the Sustainable Finance Action Plan, a major policy objective to ensure the efficient identification of such projects, to stimulate channelling of funds towards them, and hence promote sustainable investment across the EU. The policy framework is supported by a comprehensive set of legislation that aims to holistically increase the transparency and data generation across the European financial ecosystem and so enable financial market participants to allocate their capital to projects that contribute towards the 2030 and 2050 objective more efficiently. At the centre of these changes lies the EU Taxonomy, an essential building block in the EU's strategy, providing a clear definition and a science-based classification system listing economic activities, which can be considered sustainable. Simultaneously, the EU has developed two major regulations, Sustainable Finance Disclosure Regulation (SFDR) and Corporate Sustainability Reporting Directive

(CSRD, former NFRD), making it mandatory for business and financial institutions to disclose information about their sustainable activities and products, and so increase their accountability.

The new legislation has affected the status quo in the business community and financial markets. The CSRD, which is currently at the proposal stage, will dictate that companies in scope have to disclose ESG information, zooming in on the sustainability risks they face and the impact of their operations on people and the environment. Similarly, under the SFDR, financial institutions have to provide additional details on their saving and investment products, which they market as sustainable or green, and report on the alignment of their portfolios with the EU Taxonomy. The aim of the policies is to combat greenwashing and hence make it easier for asset owners and investors to find sustainable investments that contribute towards the transition. The legislation changes along with the shifts in the preferences and expectations of investors created new opportunities for financial institutions and businesses to improve their competitive advantage through timely regulatory



compliance and innovation. For instance, there has been a myriad of new products created by both investment managers and banks to increase the ratio of the green assets in their portfolio, offering loans and capital for renewable energy, improved energy efficiency of buildings, or green lease for EVs. Moreover, despite less developed capital markets compared to the western states, we have also seen an increased activity on leveraging innovative financial instruments such as green and sustainability-linked bonds, mainly by large multinational banks with a strong presence in the region, which aim to use the proceeds to finance sustainable projects through above mentioned product offering.

In addition to incentivising sustainable financing from the capital markets and financial institutions, the EU has dedicated a large portion of its Multi-annual Financial Framework (MFF) budget (also known as the NextGeneration EU) along with the EU Recovery and Resilience Facility to kick-start the post-covid economy with an increased focus on sustainable and climate areas. This unprecedented amount of capital will be deployed through multiple EU funds targeting specific climate issues and negative impacts of the transition, from development of renewable power and new infrastructure, to support of SMEs innovation and just transition of the most affected regions heavily reliant on fossil fuel industries. Additionally, in order to further expedite the comprehensive measures focused on reducing greenhouse gas emissions and adaptation to the negative effects of climate change, the EU has founded two additional instruments primarily funded by a portion of the revenues from the EU ETS System, The Modernisation Fund and Innovation Fund. Modernisation Fund aims to support the 10 lower-income EU Member States in their transition to climate neutrality by modernising their energy system and efficiency. The Innovation Fund aims to finance large projects focused on decarbonisation of energy-intensive industries through innovative technology in energy storage and carbon capture and storage (CCS), respectively. The table below shows the available financing from the main EU funds for CZ, SK and HU, along with the funding dedicated to climate action. The Innovation Fund, a funding program focused on large innovative projects in low-carbon technology, is not listed, as its amount depends on selected projects and is distributed at the EU level, and not per country as the other funds.

The goal of the Cohesion fund, which is one of the five funds under the European Structural and Investment Funds (ESIF), is to reduce the economic and social gap between different EU regions. The fund is distributed to a wide range of recipients from governments to large companies and organisations, with 37% allocated to climate-related projects in infrastructure, agriculture, and the environment. Similarly, the Just Transition fund aims to address the social, economic and environmental impacts of the transition to a low-carbon economy in selected regions heavily reliant on fossil fuel industries (e.g. mining regions), specifically supporting SMEs, clean energy technologies, the regeneration of industrial sites and reskilling of workers. As part of the unprecedented recovery package Next Generation EU, the financing under the National Recovery Plan is to mitigate the economic and social impacts of the Covid-19 pandemic. It also aims to prepare European economies for the challenges and opportunities that might come with the sustainable and digital transition, also dedicating 37% of the total funds to climate topics. The goal of the Modernisation Fund is to support the 10 lower-income EU Member States in their transition to climate neutrality by helping them modernise and improve their energy systems and energy efficiency. In conclusion, it is recommended to align the several sources of funding to leverage the right impact in dedicated sectors as described in the previous chapters.

EU Fund	Country	Full amount received (Million EUR)	Share allocated to climate topics (%)	Amount allocated to climate topics (Million EUR)
Cohesion Fund (2021-2027)	CZ	7,389	37%	2,734
	SK	1,868	37%	691
	HU	3,015	37%	1,116
Just Transition Fund (2021-2027)	CZ	1,493	100%	1,493
	SK	418	100%	418
	HU	237	100%	237
National Recovery Plan (2020-2026)	CZ	7,040	37%	2,605
	SK	6,330	37%	2,342
	HU	7,170	37%	2,653
Modernisation Fund * (2021-2030)	CZ	5,795	100%	5,795
	SK	1,557	100%	1,557
	HU	589	100%	589

*Allocations depend on the current allowance prices (EUR 30-100), the number of allowances is specific to each beneficiary Member State

Conclusion

This paper aims to identify short-term opportunities to align the Central European energy security with the 2030 European Green Deal related goals in Czech Republic, Hungary and Slovakia. We have seen that the three Central European countries have a strong dependency on Russian energy supplies, with fossil fuels coal, natural gas and oil and petroleum products, but also uranium. At the same time, the EU wants to disconnect from Russian energy supply as soon as possible (excluding uranium, for now), whilst reaching the 2030 goals such as the 55 % CO₂-reduction target.

We concluded that Central European road transport mainly uses Russian oil and petroleum products, buildings use a lot (almost 100 % Russian) gas and coal has to be phased out by 2030 to begin with. Should the three described scenarios in the dedicated chapters play out, all three countries would (almost) reach their 55 % reduction target (see table below).

There are a few observations we can derive here. Firstly, phasing out coal will be particularly interesting for Czech Republic to reach its 2030 target, but also challenging. It is the most coal dependent country of the three, and has to fill in a relatively big energy gap with renewable energy alternatives or energy efficiency. Secondly, all three national building renovation plans would help with the 2030 target and reduce the Russian gas dependency. Slovakia has the most ambitious long-term building renovation strategy, which also positions the cost-effective energy efficiency solutions well. In contrast, Czech Republic has the least ambitious long-term building renovation strategy. In light of filling in the energy gap its coal would leave behind and that transformed coal is used to generate electricity in Czech buildings, it is recommended for Czech

Republic to have more progressive building renovation plans that includes energy efficiency such as in Slovakia. Thirdly, whilst recognizing the tremendous EV potential for reaching its 2050 goals, disconnecting from Russian oil and petroleum products will be the most challenging for Central Europe from an European Green Deal, because it has little impact on our ambitious 2030 scenario of having one tenth of the entire road transport not using this anymore. Instead, it is recommended to diversify the energy source from an energy security perspective.

Finally, it is recommended to align the sources of funding to leverage the right impact. Phasing out coal and focusing on building renovation (and especially energy solutions) are two of the most important priorities to reach the 2030 goals, which would also reduce the dependency on Russian gas and coal. Funding should not only focus on renewable energy alternatives, but in fact should prioritise energy efficiency solutions first and foremost. If there is lower energy demand, less funding is required to find alternatives. It is recommended to reflect this in the funding opportunities.

	CO ₂ -emissions in 2019, difference 1990 level	Scenario 1: Phasing out coal by 2030	Scenario 2: Building renovation plans 2030	Scenario 3: 1/10 road transport CO ₂ -free	Combi: Reaching 55 % reduction target 2030
CZ	71.8 %	- 21 %	- 6 %	- 2 %	43 %
HU	64.5 %	- 5 %	- 8 %	- 2 %	49.5 %
SK	53 %	- 4 %	- 17 %	- 2 %	30 %

