

CEE CLIMATE POLICY FRONTIER

Good practices within
transport and buildings
sectors in the region



CEE Climate Policy Frontier. Identification and promotion of current best practices within the transport and buildings sectors in the CEE region.

Authors:

WiseEuropa: Małgorzata Błocka, Karolina Marszał, Aleksander Śniegocki, Zofia Wetmańska

Climate Strategies: Andrzej Błachowicz, Chandrima Padmanabhan, Alicia Ramos

Expert Forum: Ana Otilia Nutu

National experts: István Bart, Dóra Csernus, František Marčík, Matúš Mišík, Veronika Oravcová



WiseEuropa – Warsaw Institute for Economic and European Studies

Aleja Szucha 16/46
00-582 Warsaw
www.wise-europa.eu



Climate Analytics

Ritterstraße 3
10969 Berlin
www.climateanalytics.org



Climate Strategies

c/o WeWork Aldgate Tower
2 Lemn Street
London E1 8FA
www.climatestrategies.org



Expert Forum

str. Semilunei 7, apt 1
020797 Bucharest
www.expertforum.ro

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Table of contents

Introduction	5
Transport policy	7
Emissions intensity of passenger cars	9
Romania: "Rabla" programme (car scrappage scheme)	10
Electric vehicles fleet	13
Hungary: Jedlik Ányos Action Plan of 2015 (JÁT)	14
Electric bus fleet	17
Poland: Rollout of electric public transportation bus fleets	18
Share of rail transport in passenger transportation	21
Slovakia: Modernisation of the railway system	22
Share of public transportation in passenger land transport	25
Czech Republic: Law on the public services in public transport	26
Buildings sector	29
Energy efficiency gains in households	31
Romania: Thermal insulation – EIB loans	32
Energy consumption for thermal uses	35
Slovakia: Retrofit support programmes	36
Increase in share of solar water heating in final energy consumption	39
Poland: Promotion of solar collectors in household sector	40
Share of heat pumps in final energy consumption	43
Czech Republic: New green savings and Boiler Subsidy	44
Regional stakeholder workshops in Warsaw and Bucharest	47
Summary	49

Introduction

Central and Eastern European (CEE) countries are among the most emission-intensive economies in the EU. Energy use in the buildings and transport sectors accounts for most of the greenhouse gas emissions from non-ETS sectors, i.e. the part of the economy which is not included in the EU Emissions Trading System (EU ETS).

While much has been done in the past, the CEE climate action in the region has yet to reach the level of ambition consistent with the Paris Agreement. At the same time, there are significant differences within the region both in terms of climate policy instruments deployed and their outcomes. This means that there is significant potential for enhancing emission reductions in the transport and buildings sectors through promoting of best policy practices, strengthening knowledge exchange and supporting mutual learning within the region.

Transport Sector

Figure 1. Final energy consumption per capita in the transport sector, (toe per capita), 2000-2017

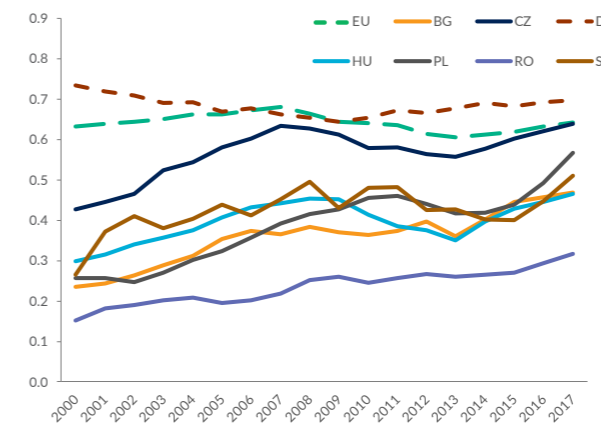
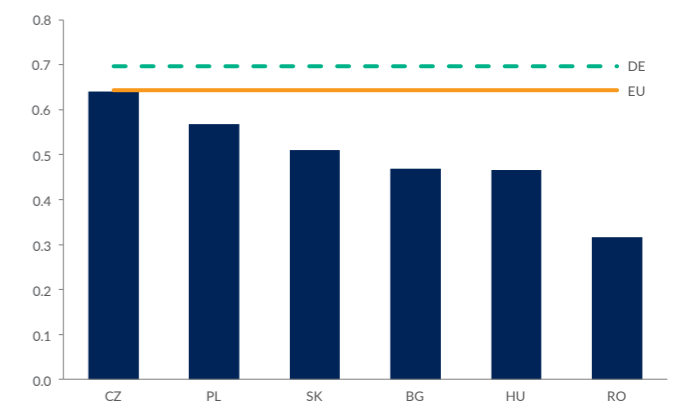


Figure 2. Final energy consumption per capita in the transport sector, (toe per capita), 2017



*toe = tonne of oil equivalent
Source: WiseEuropa based on Eurostat data

The final energy consumption per capita in the transport sector has been growing in the CEE region, while remaining relatively stable in the EU, on average. While the only country that has reached the EU average is the Czech Republic, other countries are quickly catching up, Poland and Slovakia in particular.

Buildings Sector

Figure 3. Final energy consumption per capita in the residential sector, (toe per capita), 2000-2017

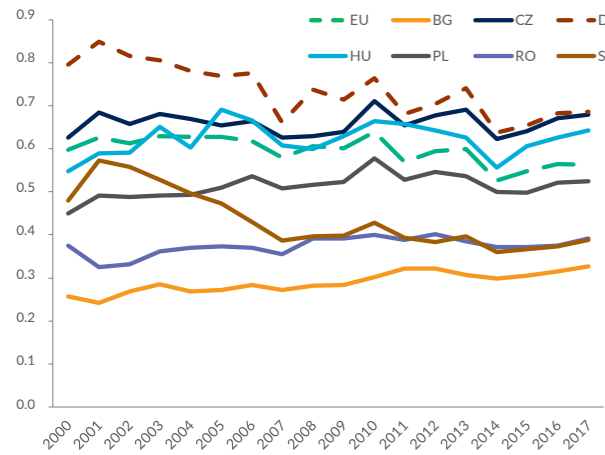
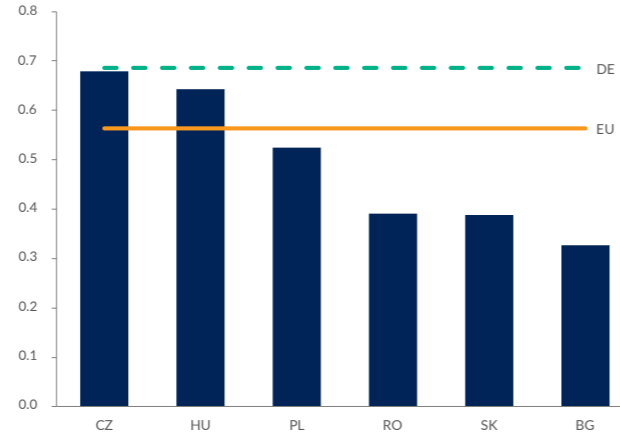


Figure 4. Final energy consumption per capita in the residential sector (toe per capita), 2017



*toe = tonne of oil equivalent
Source: WiseEuropa based on Eurostat data

Energy consumption in the residential sector has remained relatively stable, with no large fluctuations since 2000. Among the CEE countries, only Slovakia has achieved a significant drop in absolute energy consumption. In 2017, only the Czech Republic and Hungary exceeded the average consumption in the EU.



The remainder of this report presents the relevant policy examples identified for each of the CEE countries. The first section presents indicators related with transport sector and the second part focuses on buildings sector. Each of the indicators is followed by an example of good policy practice and assessment of applicability in other CEE countries.

Transport policy



Emissions intensity of passenger cars

Emissions intensity of passenger cars has decreased in all evaluated countries since 2005.

The Czech Republic has performed similarly to the EU, while Slovakia has consistently outperformed all of the CEE countries in terms of absolute value of passenger cars' emissions intensity.

Hungary, Bulgaria and Poland reduced their emissions intensity over the years but all three have consistently recorded absolute values exceeding the EU average.

Emissions intensity of passenger cars in Romania in 2005 was the same as the EU average. In recent years (before 2017), Romania has been the best performer in terms of reduction of emissions intensity of passenger cars. This was a combination of market forces and government-financed programmes.

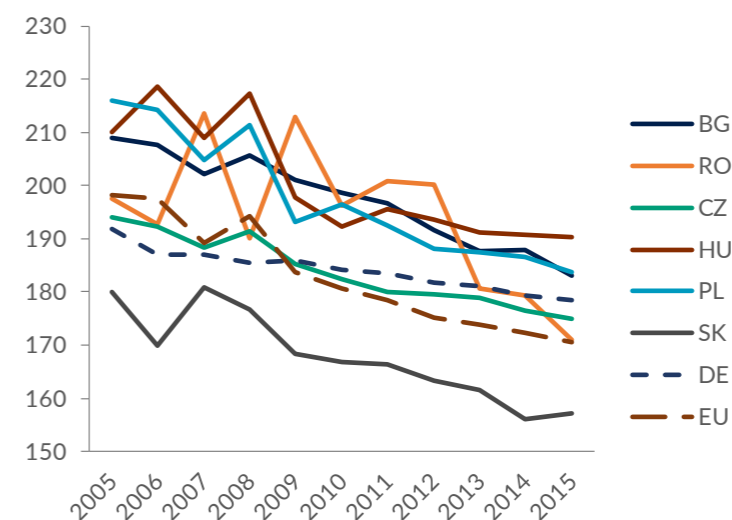
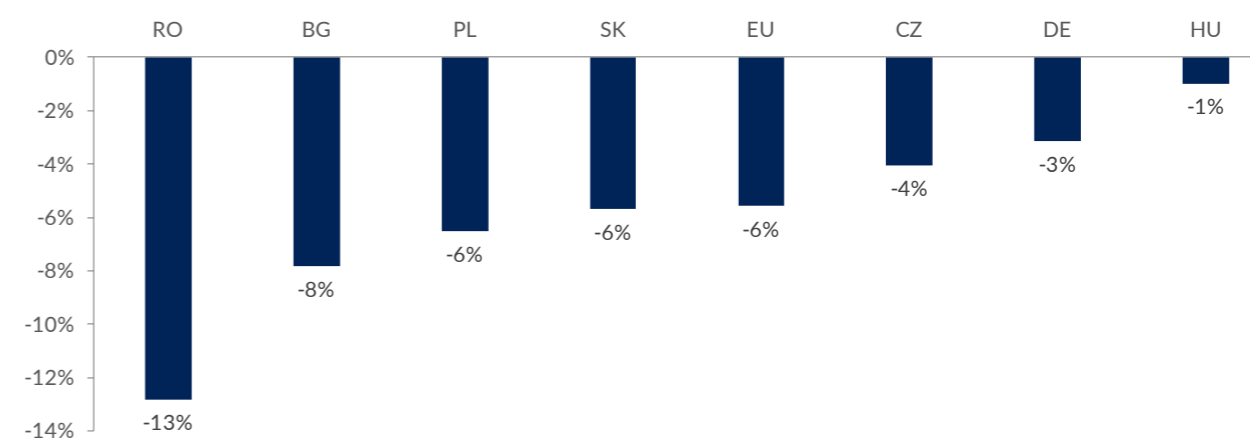


Figure 5. Emissions intensity of passenger cars (grams of CO₂/km), 2005-2015

Source: WiseEuropa based on JRC IDEES data

Figure 6. Relative decrease in emissions intensity of passenger cars in 2015, compared to the 2010 level



Source: WiseEuropa based on JRC IDEES data

Romania: "Rabla" Programme (car scrappage scheme)



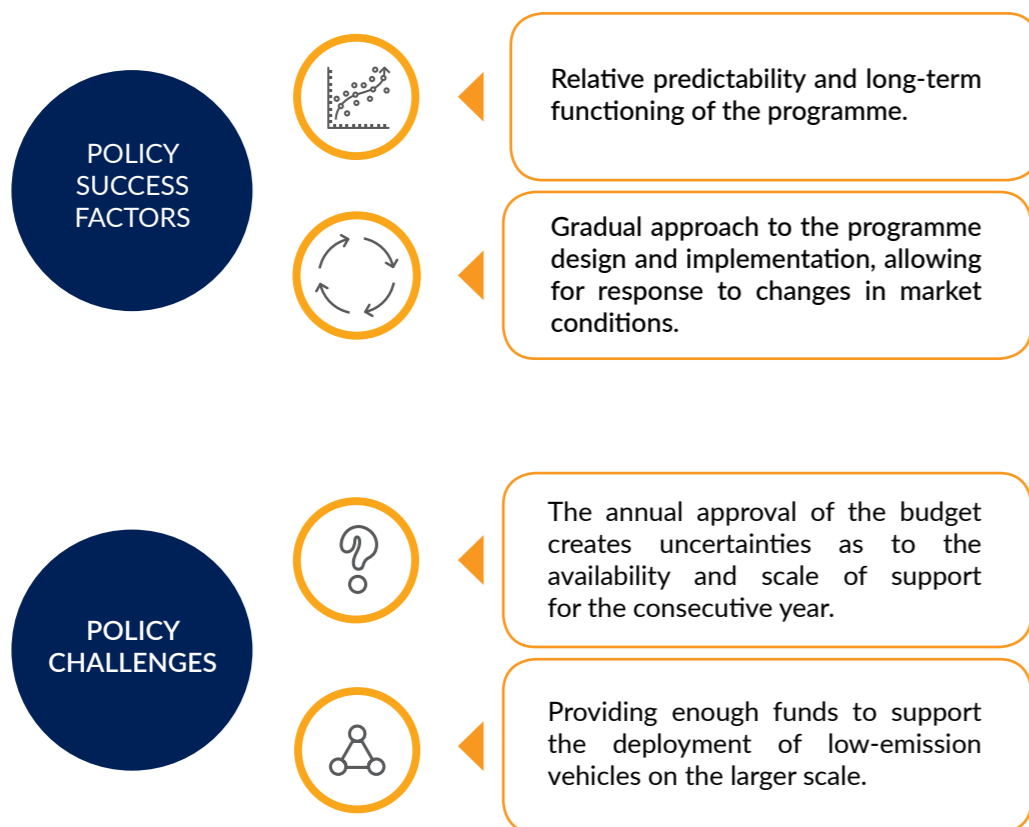
Name of the regulation: "Rabla" and „Rabla plus" programmes (car scrappage scheme)
 Category: subsidy
 Timeframe: 2005 – present

Total budget of the "Rabla" programmes in 2005-2019 amounts to almost **EUR 750 million**.

Romania has the most generous bonus scheme for electric vehicles in the EU, with a subsidy of about EUR 10,000 for electric vehicles and EUR 4500 for hybrid vehicles, capped at 50% of the vehicle's price.

In 2018, 48,000 old cars were scrapped and 47,000 new low-emission cars were purchased.

In 2018, the Rabla Plus support covered around 2000 new electric and hybrid cars. The increased sales of low-emission vehicles indicate consumer interest in new technologies; the main impediment to faster deployment of electric and hybrid vehicles is, however, the poor charging infrastructure, which lags far behind the potential of this new market.



RESULTS AND IMPACTS

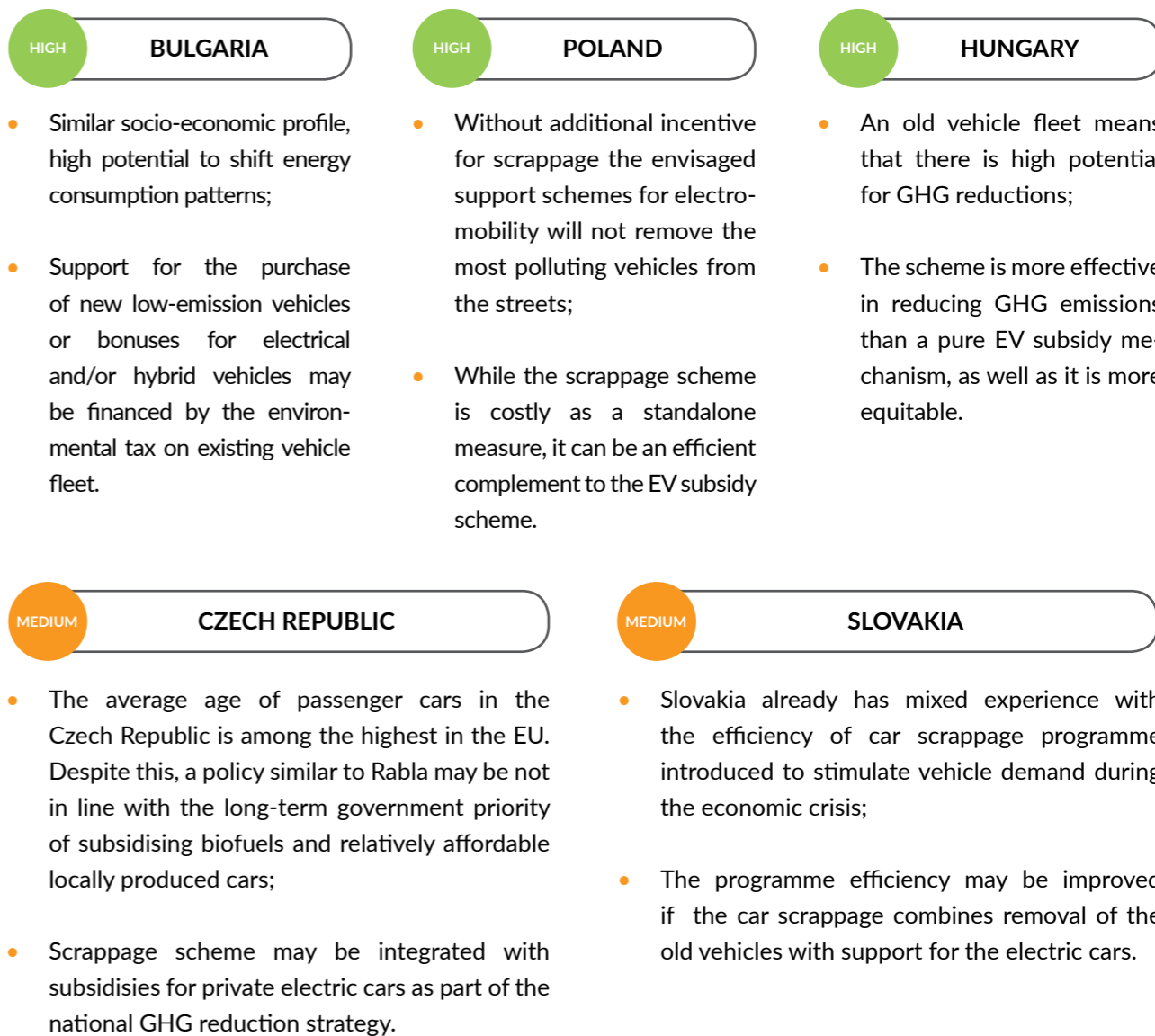
The "Rabla" programme has helped to scrap almost **660,000** ageing and high-polluting vehicles and supported the purchase of around **411,000** efficient vehicles.

The program "peaked" in 2010, with almost **190,000** cars scrapped, and has since fallen to much lower levels (**20-30,000 yearly**), though it is expected to pick up again in 2019.

The estimated CO₂ emissions saved since 2014 are more than **900,000 tCO₂**. The sales of electric vehicles reached **3%** of the sales of new cars.

The Rabla Plus programme stimulated the acceleration of electric vehicles sales in 2018, during which consumers bought **370** pure electric vehicles and **97** plug-in hybrids under the scheme.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES



Electric vehicles fleet

In the CEE region, the country with the most developed electric passenger vehicles market is Hungary. Its share of e-cars in new registrations in 2018 was 1.4%, which is by far the best score in the region – the second best performer is Bulgaria with half of that share (at 0.7%).

The electric passenger cars market in the CEE region is less developed than it is in the EU in general. When taking the number of operating electric cars into consideration, the best score in the region – Hungary’s 381 vehicles per million people – is still 5 times lower than EU average. The electric cars market has been growing relatively fast in the recent years in most CEE countries. However, following the current trends, the region is unlikely to reach similar levels of electric cars per capita in the upcoming years as the EU.

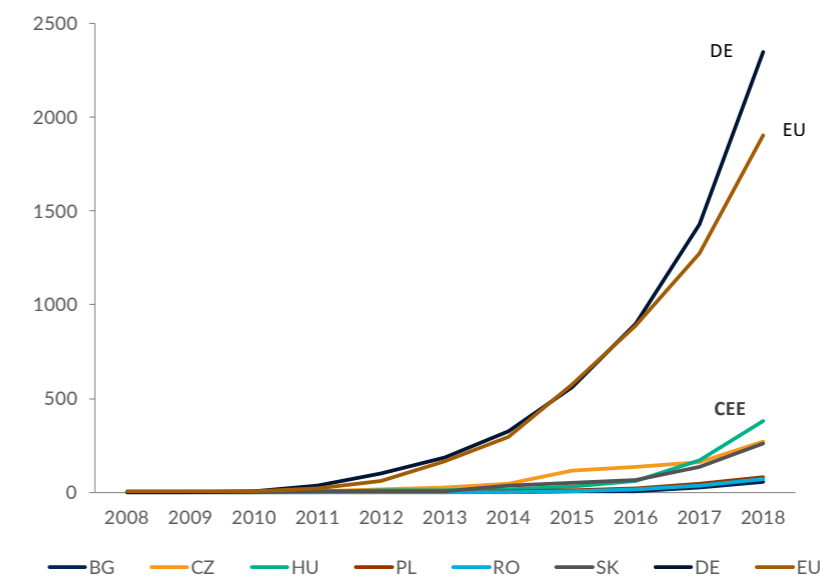


Figure 7. Electric cars stock per million people in the CEE region, Germany and the EU, 2008-2018

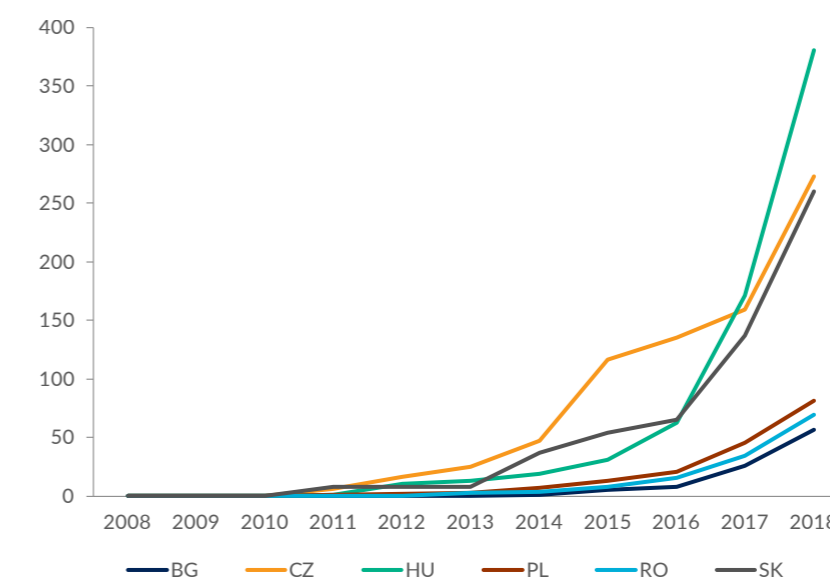


Figure 8. Electric cars stock per million people in the CEE region, 2008-2018

Source: WiseEuropa based on JRC IDEES data

Hungary: Jedlik Ányos Action Plan of 2015 (JÁT)



Name of the regulation: Jedlik Ányos Action Plan of 2015 (JÁT)

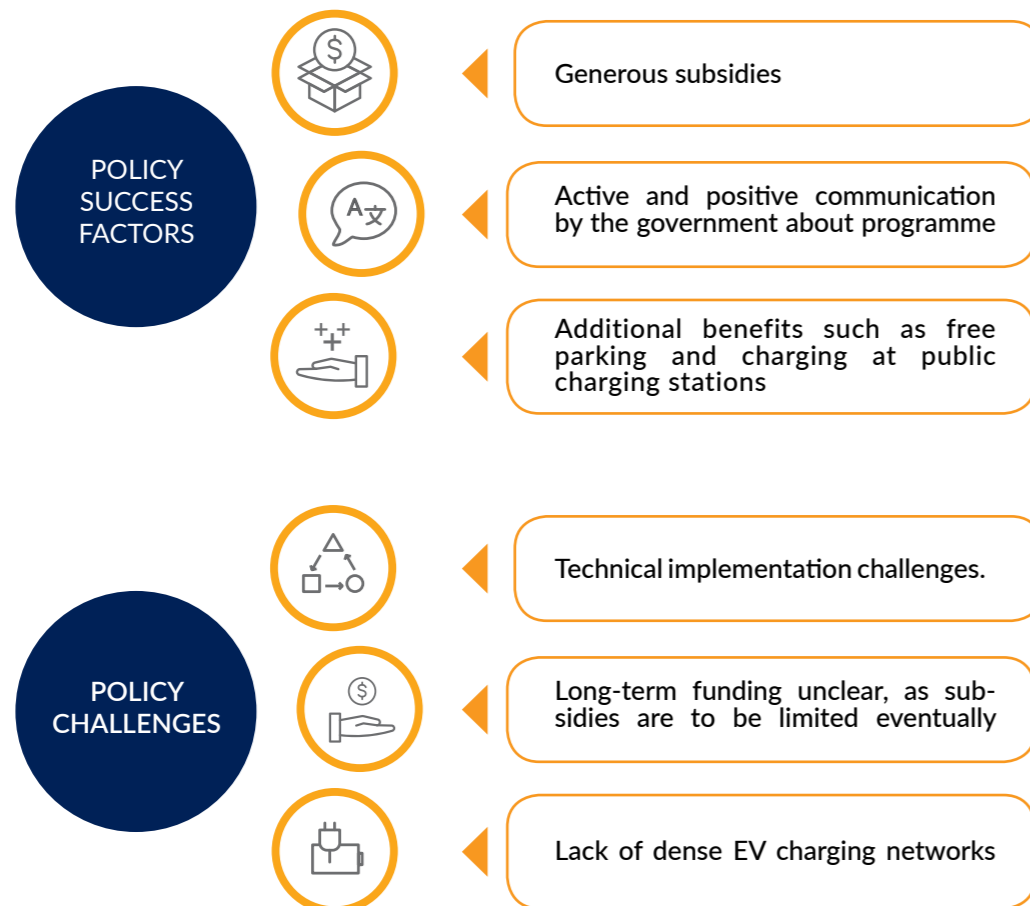
Category: fiscal, legislative, infrastructure

Timeframe: 2015 – present

The government resolution establishing the legislative tasks related to the JÁT covers **development of electric charging infrastructure and introduction of the green number plate for Electric Vehicles (EV) and hybrids.**

An additional **EUR 15 million** are allocated for 20% grants to purchase a new battery electric vehicle (up to a maximum of EUR 4700). In 2015, the government supported the purchase of **20 EV buses by the city of Budapest with EUR 12.2 million.**

The most visible outcome of the Jedlik Plan is the spreading of green number plates for electric vehicles. As of late 2018, there were more than **8500** vehicles with green number plates. This is still only **0.23%** of the entire passenger vehicle fleet, and half of their share is in Germany, but strong growth has been achieved. Having a green number plate comes with many benefits: free parking in Budapest and other cities, free charging.



RESULTS AND IMPACTS

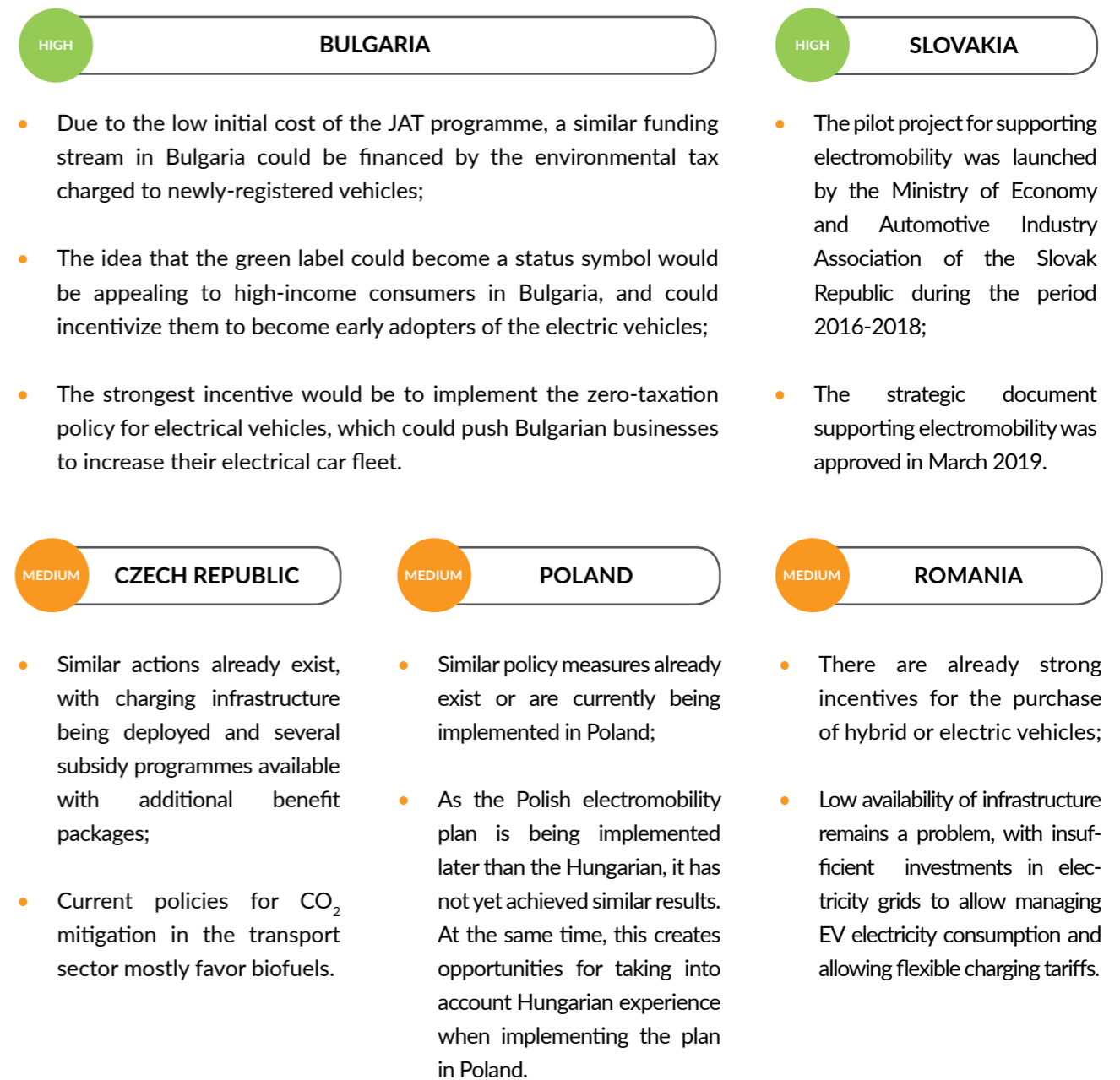
Since 2016, circa **EUR 16.5 million** has been made available for vehicle subsidies and the purchase of about **1200** cars.

8500 EVs and hybrids (among them **3700** BEVs) were eligible for a green number plate in 2018.

The most visible outcome of the Jedlik Plan is **spreading of green number plates for electric vehicles.**

The Plan has contributed to the development of charging network, allowing Hungary to achieve **7** EVs per 1 charging point, which is better than the EU average of **8** cars per charging point.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES



Electric bus fleet

The first electric buses in operation were introduced in the CEE region in 2015 in Poland. Since then, **Poland has maintained the biggest e-bus fleet** both in absolute terms and adjusted for population.

At the current rate of development of the e-bus fleet, Poland is **likely to reach or surpass the EU average** in the upcoming years. The **entire CEE region is lagging behind the EU**. The number of electric buses adjusted for population in Bulgaria in 2018 was **29 times lower** than in EU and in Romania, Czechia and Slovakia respectively **16, 11 and 2.5 times lower**.

Hungary with **3.4 electric buses per million inhabitants** is the second best performer in the CEE region. Slovakia, with **1.7 e-buses per million inhabitants** in 2018, has less than a half of the number in Hungary or Poland, but at the same time performs substantially better than the Czech Republic, Romania and Bulgaria.

Figure 9. Number of electric buses in operation per million inhabitants, 2018

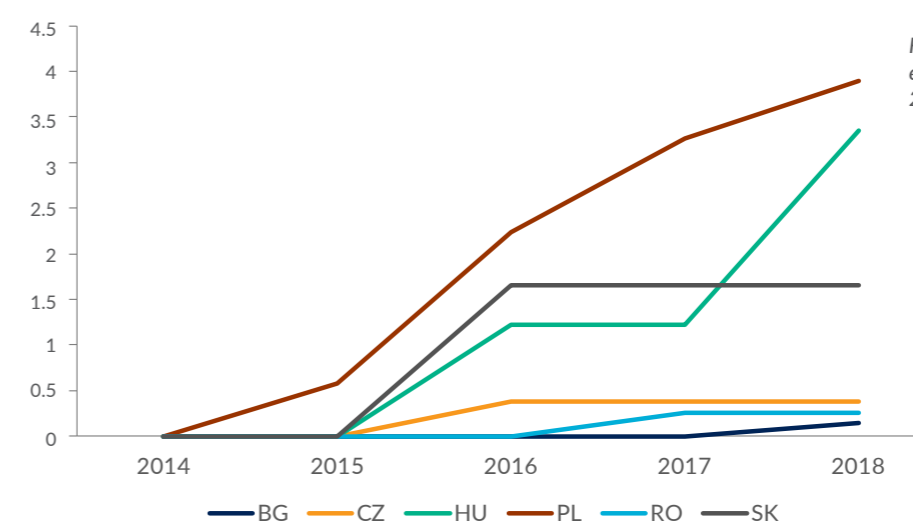
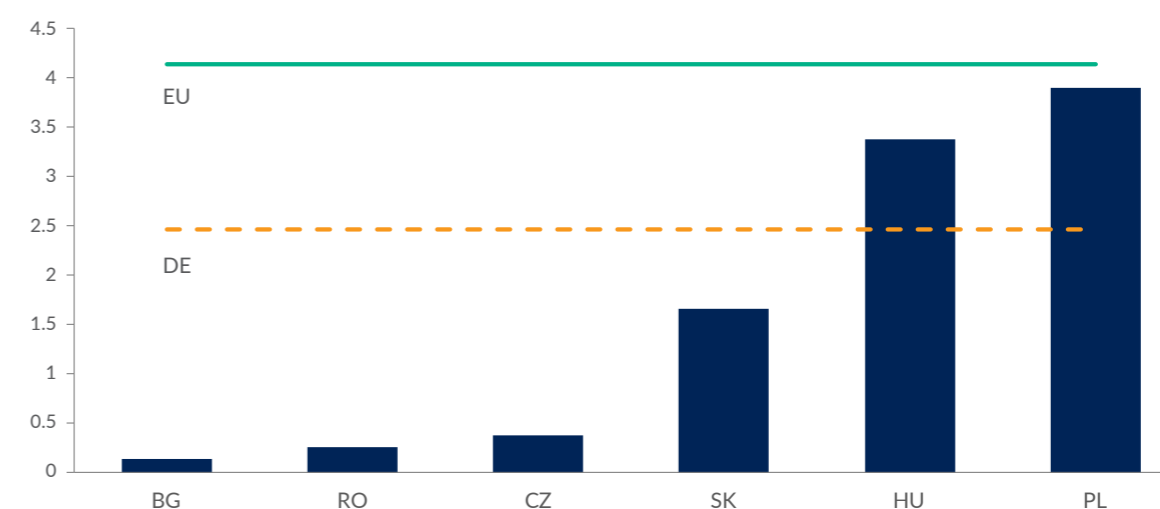


Figure 10. Number of electric buses adjusted for population (per million inhabitants), 2014-2018

Source: WiseEuropa based on EAFO and Eurostat data

Poland: Rollout of electric public transportation bus fleets



Name of the regulation: Rollout of electric public transportation bus fleets

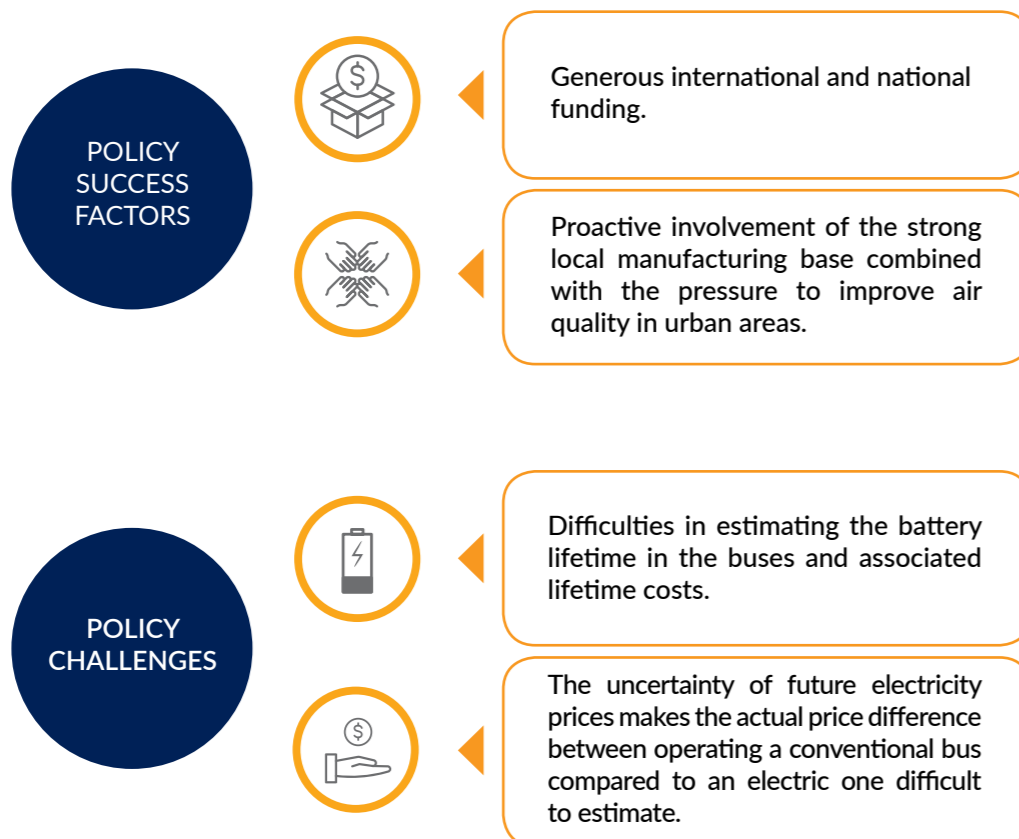
Category: financial

Timeframe: 2014 – present

The objective set in the Polish Act for Electromobility requires for all communities over 50,000 inhabitants to have **at least 30%** of their public transport bus fleets emissions-free by 2028.

The first city that established a fully electric bus route in Poland is **Cracow**. In 2014, the local public transport enterprise started testing electric buses that were temporarily made available by several manufacturers. In 2016, an auction was carried out to purchase **20** electric buses, which was financed thanks to the European Regional Development Fund within the Common Regional Policy. The expense amounted to about **PLN 43 million** (net value). Moreover, the city is partnering with the National Center for Research and Development in a big-scale e-mobility project with a goal of deploying large bus fleets in many Polish cities – **over 100** in Cracow itself.

Currently in Warsaw there are **30 e-buses** operating in the city – the first 10 were deployed in 2015, followed by 20 more in 2017. An auction for the delivery of the next **130** electric buses ended in February 2019 and was subsidized from the European Cohesion Fund with **EUR 41 million**.



RESULTS AND IMPACTS

Deployment of electric bus fleets in numerous Polish municipalities. Currently the biggest bus fleet is in **Warsaw (30)** buses), followed by **Cracow (26)** buses).

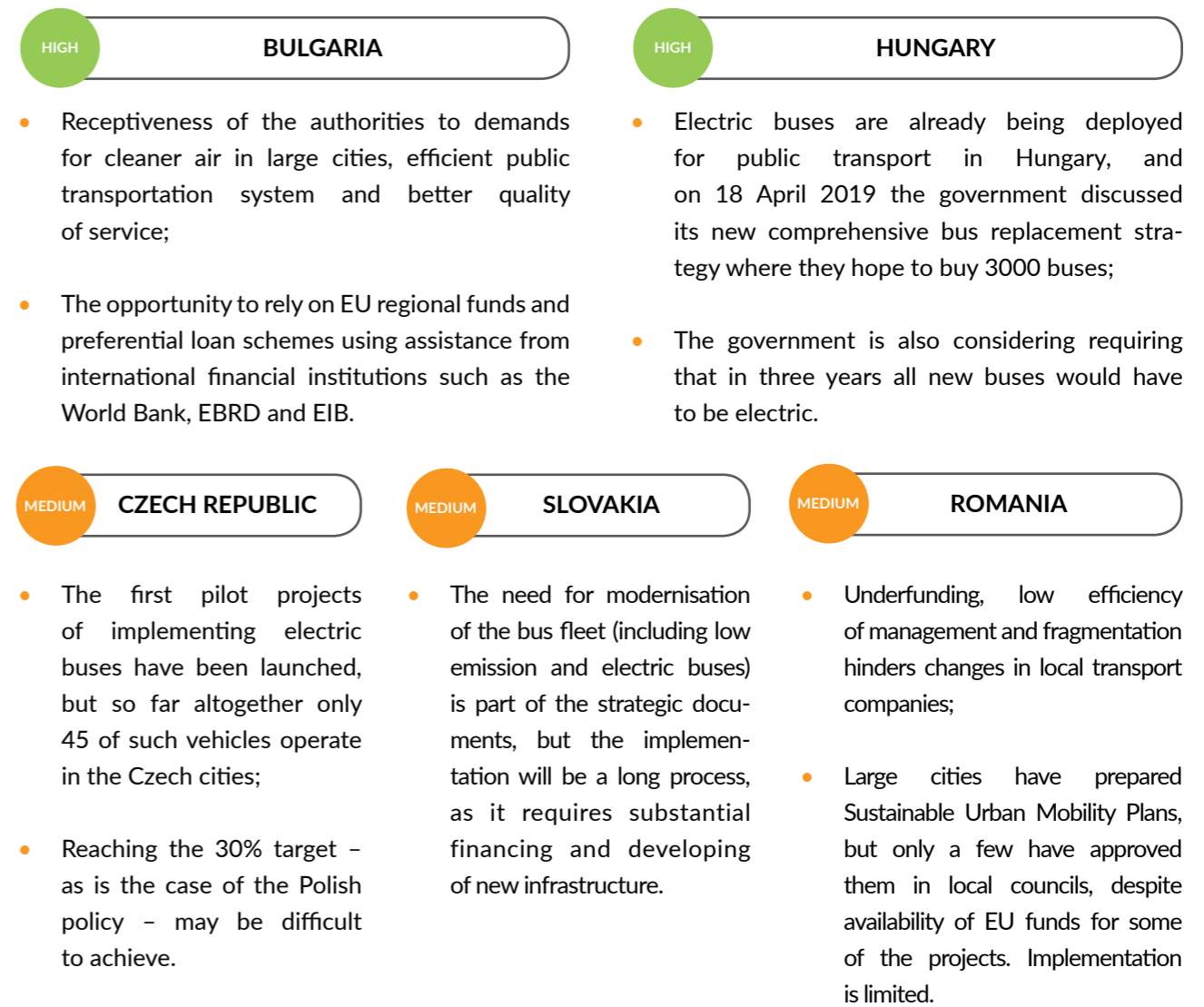
In 2014, Poland did not have any electric buses in operation. By 2018 however, the number was already **148**.

As the electric bus manufacturers are gaining market scale thanks to large public orders, the subsequent price reduction is very likely.

Increase in the number of public orders – for example, Warsaw already ordered additional **130** electric buses and Zielona Góra ordered **47** electric buses.

Further examples include Szczecin, Gdynia and Poznań, all of whom signed subsidies contracts with the GEPARD programme to obtain **6** new electric buses each.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES





Share of rail transport in passenger transportation

The share of railway transport in overall passenger transportation in the CEE region in the years 2005-2016 has generally remained **below 10%**, with the only exception being Hungary in the beginning of the period considered.

All CEE countries except for Slovakia and Czech Republic have decreased their shares of rail transportation between 2005-2016. The indicator value in terms of EU average and for Germany itself increased, reflecting the different tendency in this regard between Western Europe and the CEE region.

Slovakia is **the best performer** in terms of rail transport share in passenger transport in the years 2005 - 2016. The total volume of rail transport increased by **60%** between 2005-2016, and the distance travelled by railways yearly per citizen rose from 406 km in 2005 to 629 km in 2016 (**58%** increase).

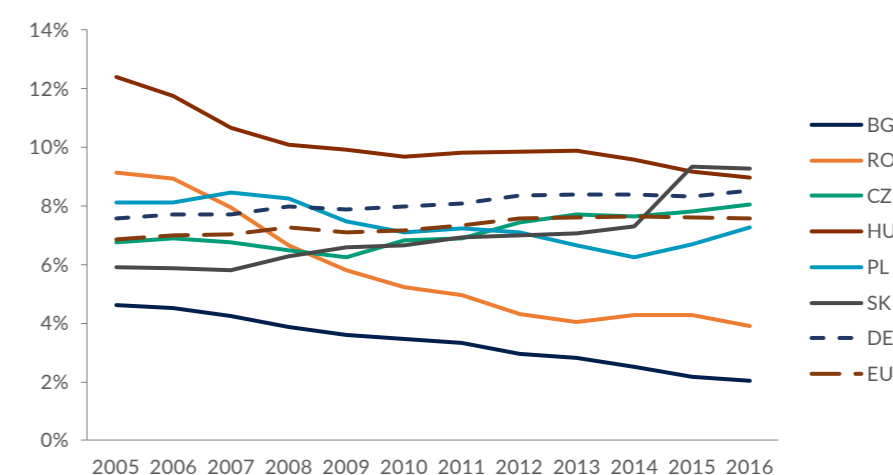


Figure 11. Share of rail transport in passenger transport, 2005-2016

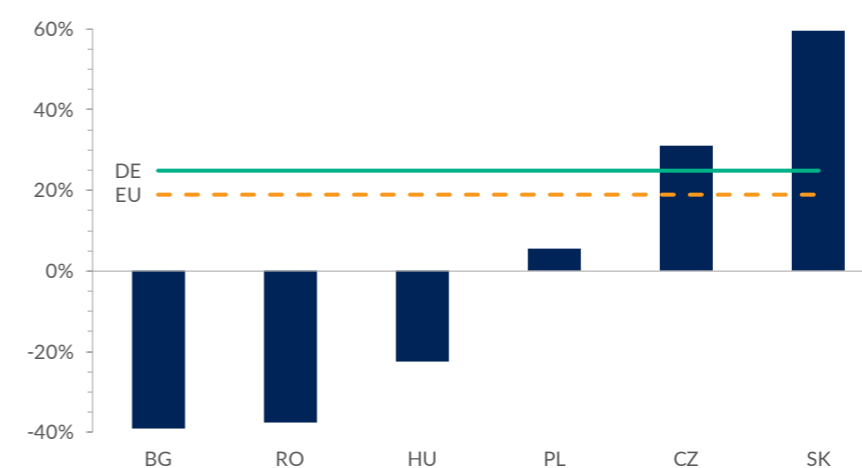


Figure 12. Total rail transport volume change, 2015/2005

Source: WiseEuropa based on on DG Move and Eurostat data

Slovakia: Modernisation of the railway system



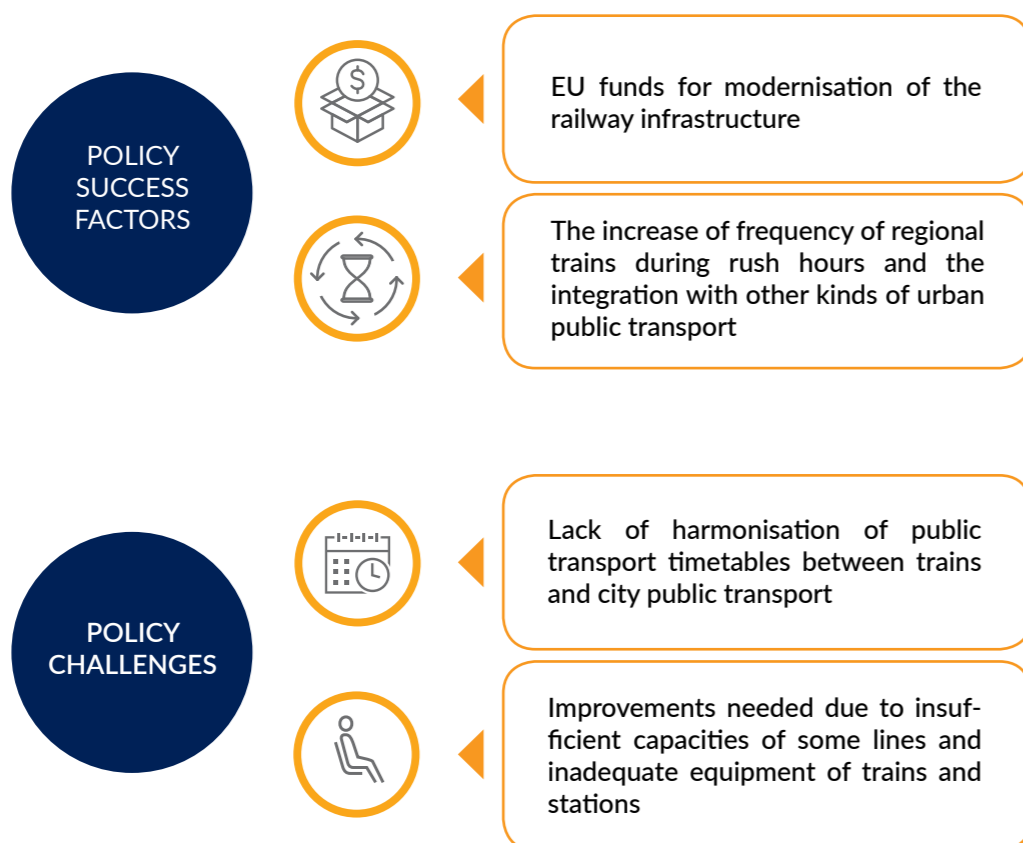
Name of the regulation: Modernisation of the railway system

Category: infrastructure

Timeframe: 2008 – present

Slovakia has modernised more than **121 km** of rails since the accession to the EU. Between 2007 and 2013, **EUR 1.02 billion** of the EU funds were allocated by Operational Programme Transportation for the modernisation of infrastructure and rail fleet to Railways of the Slovak Republic (ŽSR) and **EUR 88 million** to Railway Company Slovakia (ZSSK). For the period 2014-2020, **EUR 1.9 billion** have been allocated for further modernisation of railway infrastructure and rolling stock upgrading for this transport mode.

Regional rail track Bratislava – Komárno – Dunajská Streda which connects the capital city Bratislava with towns and villages with southern part of the country provides a good example of the Slovak approach to modernisation of the railway system. The Ministry of Transport decided to open public tender and to involve private companies. The contract with the winning company RegioJet is valid from 2012 until 2020. In 2011 the track was operated by ZSSK with **790 thousand passengers** per year. In 2018 the number of passengers reached almost **3.8 million**, which was one million higher compared to 2017. The train transports about **500 – 700 passengers** during rush hours. The trains were the first to be equipped with wi-fi connections, air-conditioning and they are also equipped for people with disabilities.



RESULTS AND IMPACTS

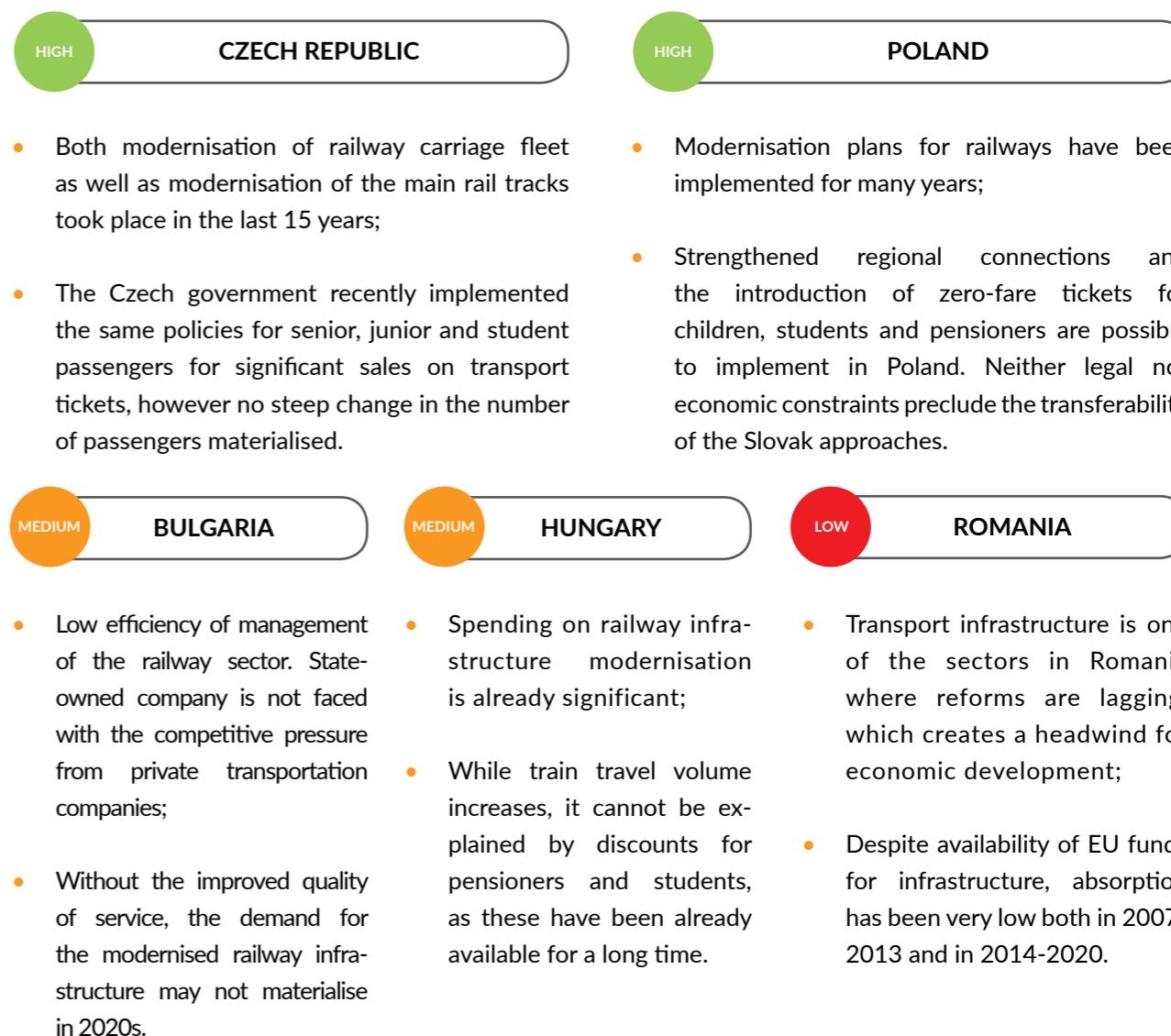
Modernisation of infrastructure and replacement of the old trains and wagons which operate mainly in the Bratislava and Košice regions during rush hours.

Comfortable service for the passengers thanks to the opening of the market to the new railway operator.

Increase in the number of passengers thanks to the extension of new regional lines and better integration of rail transport with public transport in Bratislava.

Increase in safety of the infrastructure and speed of travel.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES

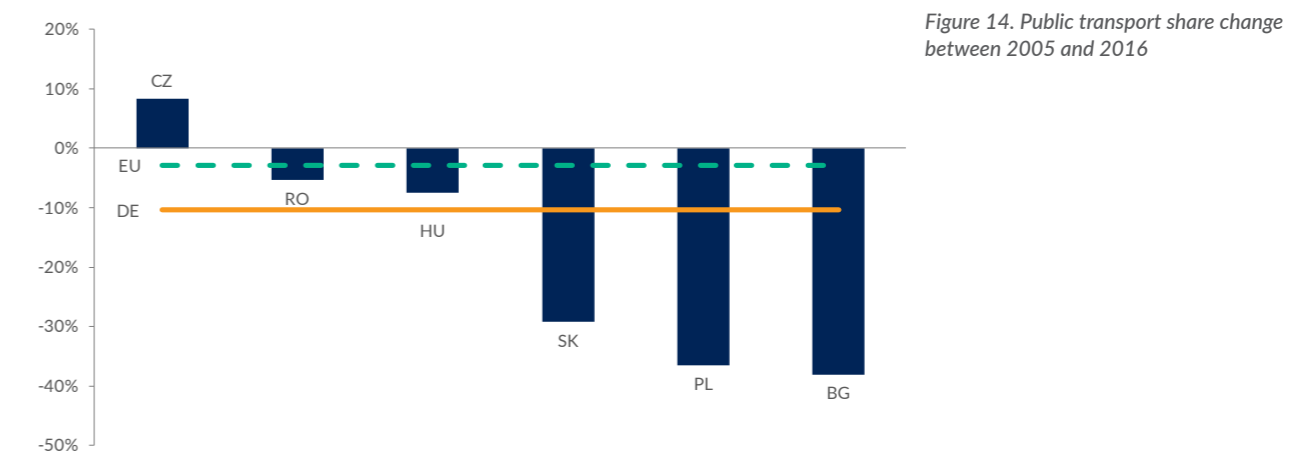
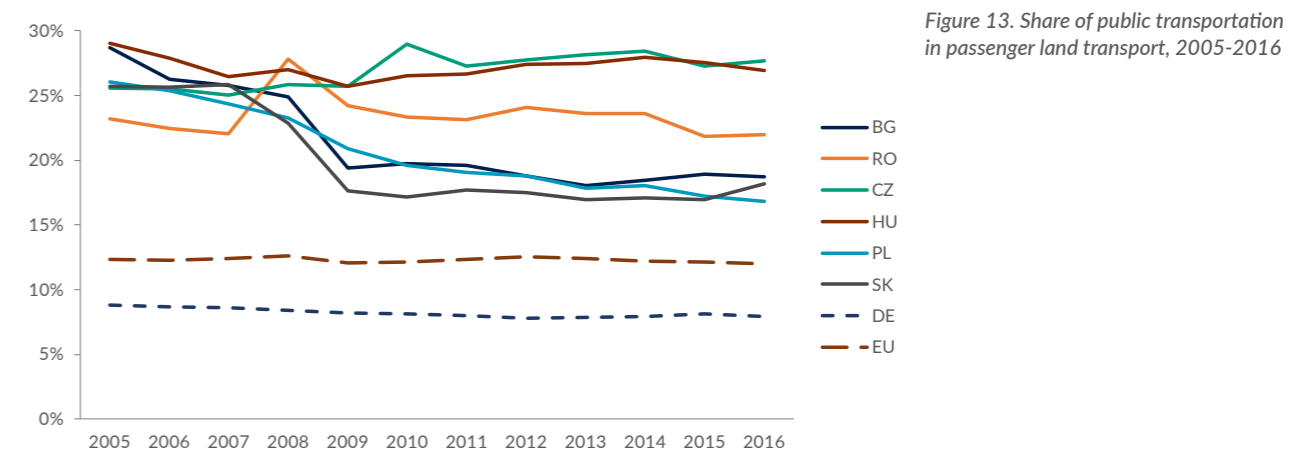


Share of public transportation in passenger land transport

The share of public transport in total passenger land transport is **substantially higher** in the CEE region than the EU average. Among the CEE countries, the **Czech Republic** and **Hungary** are leading in terms of public transport share, with **28%** and **27%**, respectively, in 2016.

Almost all countries considered saw a **decrease** in the share of public transport in land passenger transportation between 2005 and 2016. The sole exception is the **Czech Republic** which increased it by **8%**. The biggest **reductions** – **38%** and **36%** respectively – were recorded in **Bulgaria** and **Poland**.

The country leading the region in terms of distance travelled by land public transport per capita in 2016 is the **Czech Republic** with a value over **2500 km**.



Source: WiseEuropa based on DG Move

Czech Republic: Law on the public services in public transport



Name of the regulation: Law on the public services in public transport

Category: fiscal, financial, legislative

Timeframe: 2015 – present

The goal of the regulation is to provide public transport connections to more than **6 200 settlements** in Czechia via delegated authority to the 14 regional administrations, offices, and in certain cases coordinators of the integrated public transport. To make the market economically viable, the state guarantees so-called **retroactive compensations** of proven business losses of individual transportation companies procured via **open and transparent tenders**.

The city of **Olomouc** is a good example of a region with an established integrated transport system organized by the regional transport coordinating office. The regional administration together with the municipality of the city of Olomouc established a coordinator of the Olomouc Regional Integrated Public Transportation System. The coordinator is responsible for network defining, timetable solution, common fare and transportation directives, controlling, revenues division and marketing. Transport accessibility of the Olomouc region is provided by **3582 km** of roads, of which only **12.3%** are first class roads. There is **601 km** of railways in the region. Important rail junctions are in Olomouc and Přerov. The railway network is spread equally all over the region's territory.



Historical background – the presence of well-developed public transport before 1989



Establishing regional administrations and in some cases regional transport coordinators



Modernisation of the majority of public transport vehicles



Geography and population density of the Czech Republic



Partial privatisation of the sector combined with the regulated fares

POLICY CHALLENGES



Growing number of cars



Dependence on regional budgets and economic conditions



Low share of first-class roads and highways

RESULTS AND IMPACTS

The overall number of passengers in regional bus transport has remained stable since 2005 despite the growing number of individual cars.

The regional public transport systems all around the country have remained significant actors in national transport.

Thanks to the modernisation of vehicle fleet and subsidies, the regional public transport is still able to compete with individual car transport.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES

MEDIUM

BULGARIA

- Public transportation is losing attractiveness due to quickly growing ticket prices, which make passenger car use more cost and time effective;
- However, it is possible to switch back to the use of public transportation through the introduction of toll taxes, the increase of taxes on old vehicles, as well as completion of restructuring of the state-owned railway company in order to enable necessary investment in new trains, tracks and communication infrastructure that would allow high-speed trains to operate.

MEDIUM

POLAND

- Cooperating with individual private transport operators could be applied in Poland in order to create a consolidated system in rural regions where many private companies operate;
- Czechia is a more urbanised country than Poland, which makes creating integrated transport systems harder due to lesser concentration of population in closer areas. Designing an integrated transport system in areas with few towns and mainly small villages is a big challenge.

MEDIUM

HUNGARY

- The trains are owned by the state railways and the local public transport by the city, and there has never been a strong political will to reconcile their conflicting interests;
- Large parts of Hungary are sparsely populated, and have only buses as a sole type of public transport.

MEDIUM

SLOVAKIA

- Regional integrated public transport is already implemented in Bratislava and partially in the Žilina region and has been under discussion in other regions;
- Slovakia is a relatively small country which makes it easier to develop appropriate domestic transport connections;
- The biggest challenge is coordination of public transport providers, state, regions and municipalities.

MEDIUM

ROMANIA

- The public transport is extremely fragmented and overall is a low priority for public policy;
- No Sustainable Urban Mobility Plans are properly implemented, though some of them have been approved in local councils.

Buildings sector



Energy efficiency gains in households

The progression of energy efficiency gains in households in the years 2000-2015 **diverges significantly** between the considered countries. Since 2000, Romania was **constantly increasing** its energy efficiency and outperformed other CEE countries, as well as the EU and Germany; however, this is also because it started from a very low base in 2000 compared to the rest of the region.

Large energy efficiency improvements have also been observed in Slovakia, which within 15 years increased its energy efficiency by **36%** (3 p.p. less than Romania). Energy efficiency in Poland, Czech Republic, Hungary and Bulgaria has been increasing over the considered period, however, the growth has been much lower than the EU average, as well as in Germany, Slovakia and Romania.

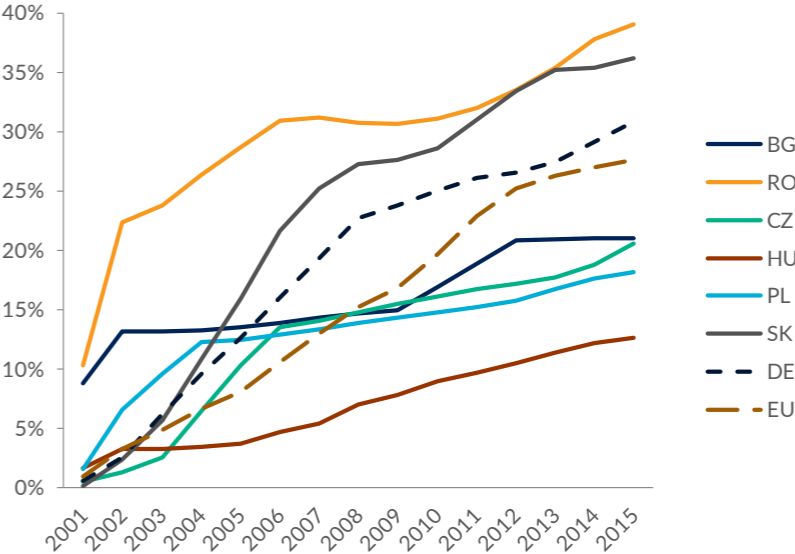


Figure 15. Energy efficiency gains in households since 2000 (indexed to the level of the year 2000)

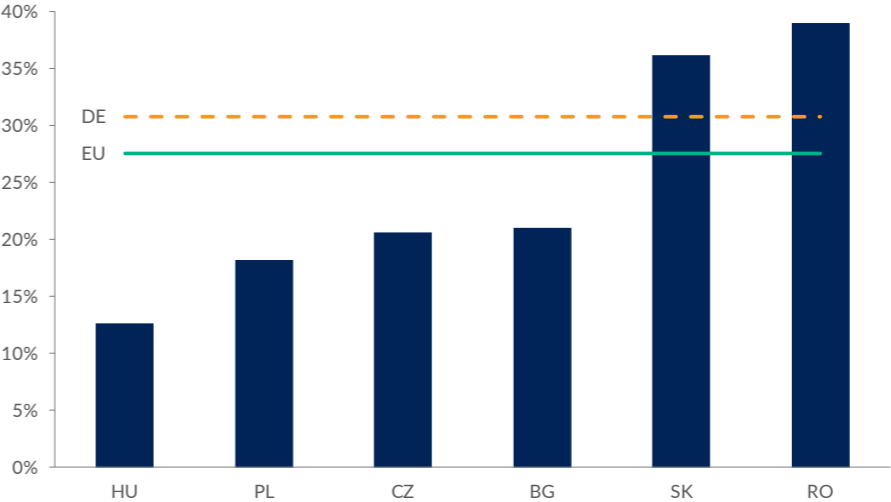


Figure 16. Energy efficiency gains in households since 2000

Source: WiseEuropa based on Odyssee data

Romania: Thermal insulation – EIB loans



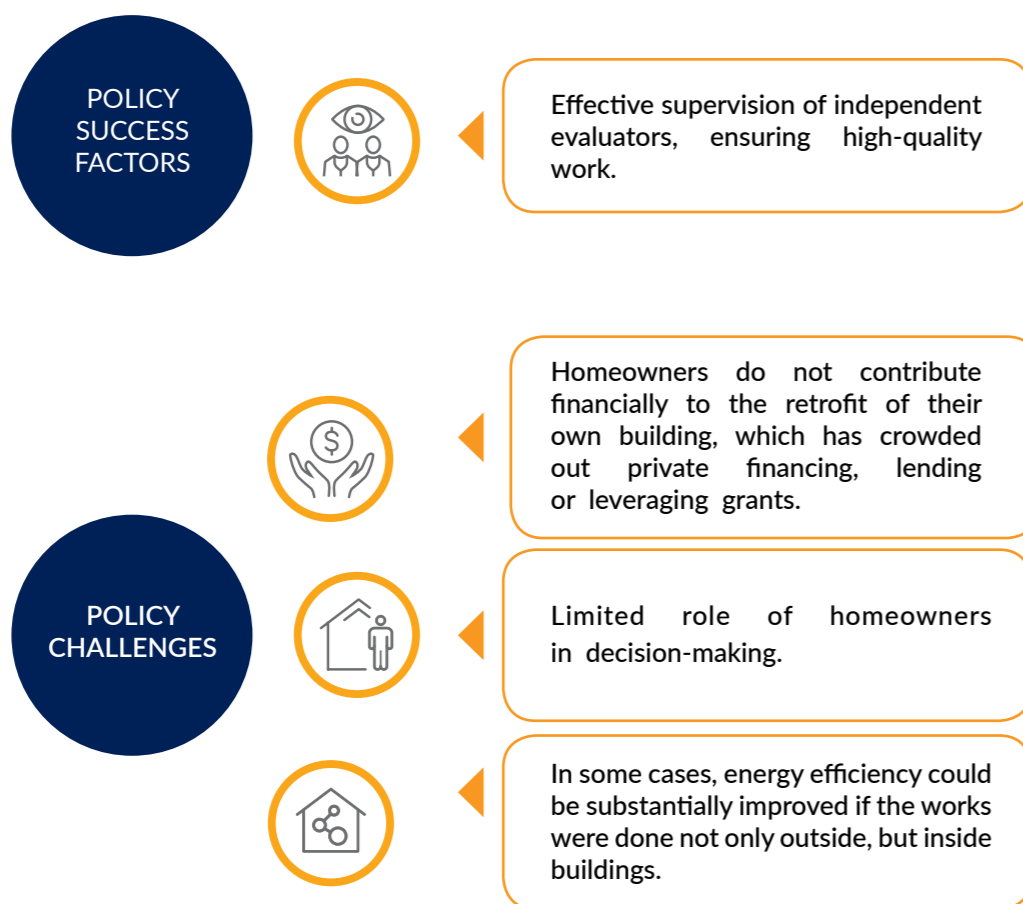
Name of the regulation: Energy efficiency measures in residential buildings – thermal insulation

Category: financial

Timeframe: 2008 – 2018

EIB has provided municipal loans for energy efficiency amounting to about **EUR 600 million** for **2200** buildings in several districts (1,2,3,4,6) in Bucharest. By 2015, a total of about **EUR 440 million** loans had been signed. The loans are to be repaid by the local budget; in most districts, there was no co-financing from the owners.

District 1 was from the beginning the most advanced in the implementation of the EIB programme. In 2007-2014, the district had finalized **820** buildings (84% of the total multi-family buildings eligible for financing), and the remaining 150 blocks had been finalized after 2015. The municipal budget provided mostly co-financing for EIB loans and full financing for a very small number of multi-family buildings. The works done include external insulation, while no works were done inside individual apartments.



RESULTS AND IMPACTS

Retrofitted buildings **save up to 50%** of their energy consumption after the finalisation of the project.

The total energy savings at the end of the EIB projects in the 5 districts of Bucharest will be **1 TWh/year**.

District 1 has obtained **50%** of the total amounts in EIB loans, so the EE gains in this district alone can be estimated at **500 GWh/year**.

The main benefit for consumers from the thermal insulation programs consists of **improved comfort of living**.

District heating prices are the only subsidized energy prices and most multi-family buildings are still connected to district heating. As a result, homeowners are **unwilling to invest** in thermal insulation to reduce utility bills and thus recover the initial investment.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES



Energy consumption for thermal uses

Energy consumption for thermal uses per surface area **decreased** in all six CEE countries, Germany and the EU in general since the beginning of the 21st century. While Bulgaria showed the lowest value of the indicator in each year between 2005 and 2015, **Slovakia improved** the most over the 10 years period, going from **195 to 115 kWh** per square meter (**35% reduction**), thus exceeding the German (27%) and EU (24%) reduction rates.

Except for Bulgaria and Slovakia, which both recorded lower levels of energy consumption for thermal uses per surface area than Germany and the EU average, all other CEE countries showed levels **substantially higher**. Romania's value has been **the highest** among the countries considered – however, it also declined significantly (18% reduction) in a 10-year period.

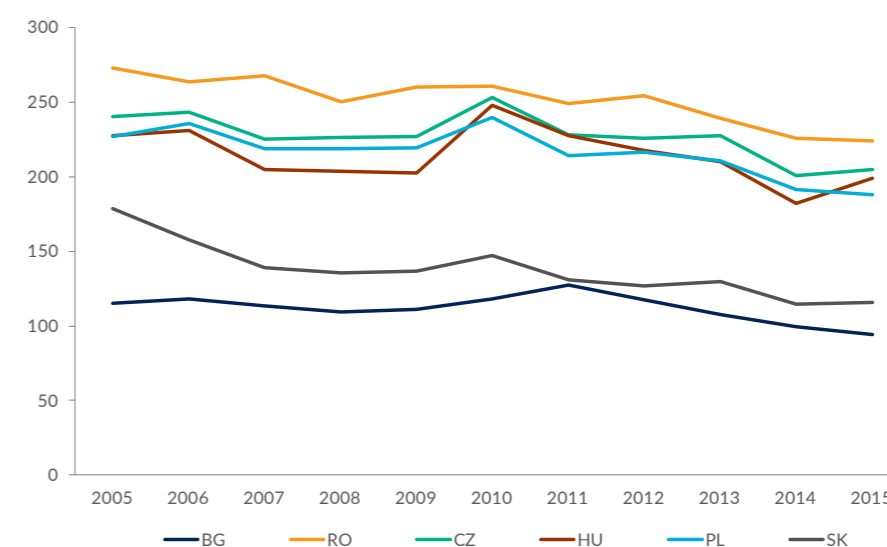


Figure 17. Energy consumption per surface area (kWh per sqm), 2005-2015

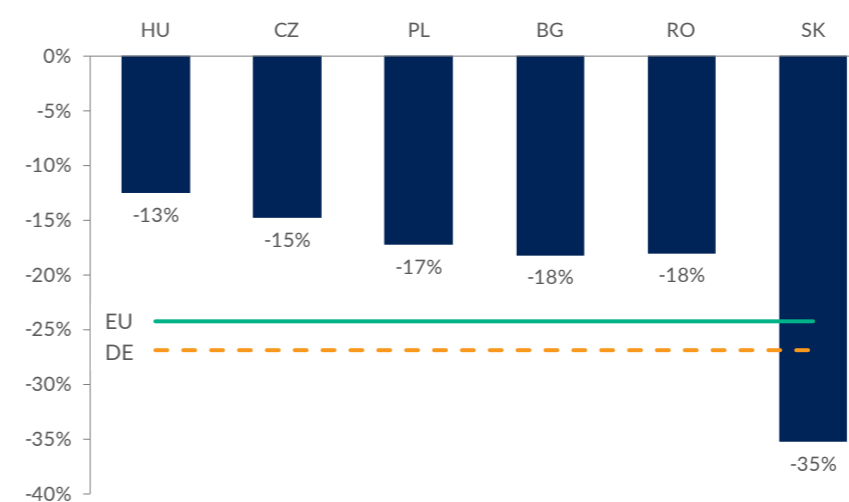


Figure 18. Decline in energy consumption for thermal uses per surface area, 2015 (relative to 2005)

Source: WiseEuropa based on JRC IDEES data

Slovakia: Retrofit support programmes



Name of the regulation: Retrofit support programmes

Category: financial

Timeframe: 1992 - present

Systematic support for increasing thermal efficiency of the building stock in Slovakia has been implemented since 1992. Slovak State Fund for Housing Development has been created to support not only retrofits of ageing buildings, but also their insulation and improvement of their energy efficiency. The Fund's main tool is an offer of long-term low-interest loans for special purposes of dwellings refurbishment and/or insulation. These loans are often 0% interest. In 2017 70% of all Fund's loans had 0% interest. The loan can be used to insulate the facade, refurbishment and insulation of the roof and refurbishment of windows and doors. The main beneficiaries are households and flat owners represented by building management companies who can benefit from low-interest loans for refurbishment and insulation of their building.

Between 1996 and 2016, the Fund provided EUR 803 million in loans for both refurbishment and insulation. Financing of the Fund is done with own funds, state budget and EU funds. The overall revenues in 2017 were EUR 394 million and total costs of EUR 195 million.

POLICY SUCCESS FACTORS



Generous subsidies and preferential loans



Large number of programmes focused on improvement of thermal efficiency of buildings developed by various ministries and agencies

POLICY CHALLENGES



Low-income households do not benefit from increased insulation as they do not fully utilise the heating system in order to save on heating costs



Previous refurbishment and partial insulation decrease the positive effects of insulation on the final energy bill

RESULTS AND IMPACTS

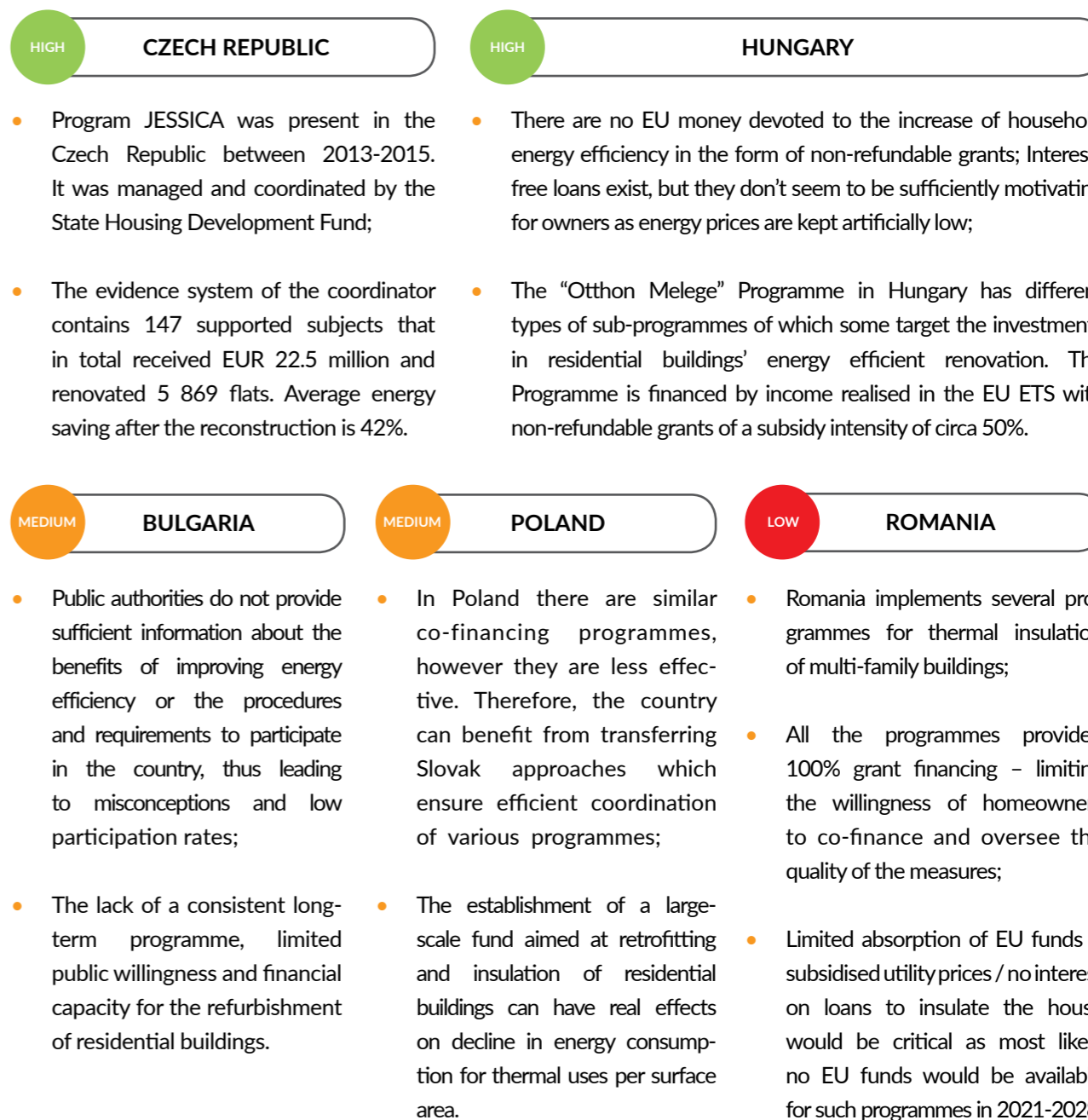
It is estimated that more than half of residential buildings (apartment buildings, 58%) and more than one third of family houses (37.5%) underwent refurbishment by the end of 2016.

The State Housing Policy expects an annual increase of 29,000 units in residential buildings and 22,000 family houses to be refurbished in the upcoming years.

An increase in the number of insulated and refurbished blocks of flats contributed to a decrease of energy consumption in the housing sector and an increase of energy efficiency in the buildings sector.

The buildings sector was the main contributor of energy savings in Slovakia in the period 2014-2016 when it altogether contributed to the overall goal of energy consumption decrease with 5 016 TJ (out of 9 617 TJ).

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES





Increase in share of solar water heating in final energy consumption

Share of solar water heating in final energy consumption in the CEE region is **substantially lower** than the average in the EU. Between 2010 and 2017, the percentage **increased** in all countries (except for Romania). The biggest relative increase occurred in Poland where the indicator value rose from **0.03%** in 2010 to **0.24%** in 2017.

In terms of the share of solar water heating in final energy consumption in each year between 2010 and 2017, Bulgaria is the best performer in the region. However, when taking into consideration the share's relative increase in this period, Poland is the leader with an over **600%** increase.

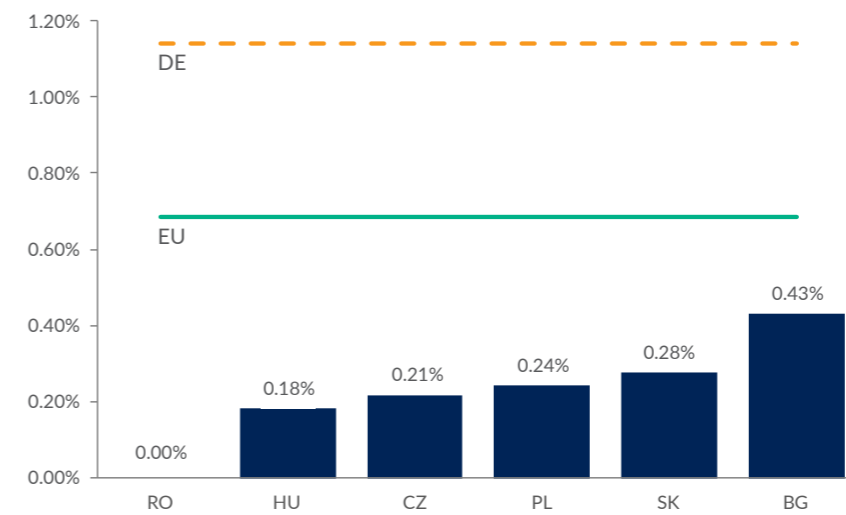


Figure 19. Share of solar water heating in final energy consumption, 2017

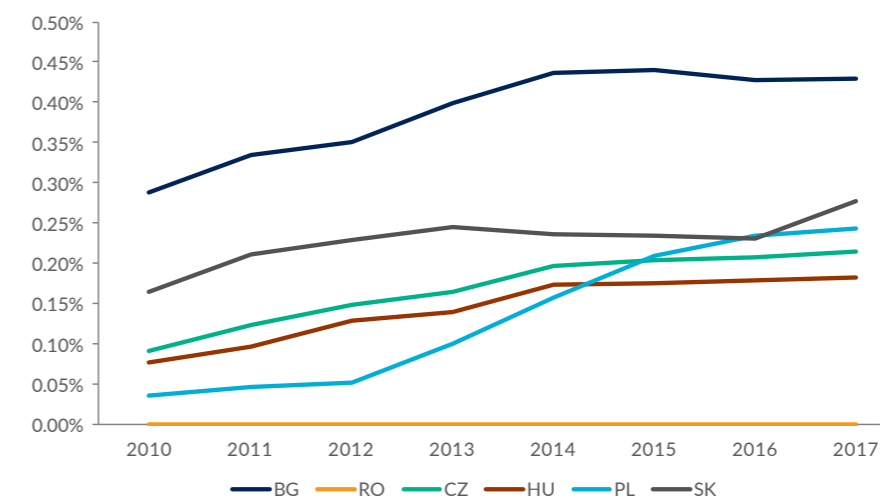


Figure 20. Share of solar water heating in CEE countries, 2010-2017

Source: WiseEuropa based on Eurostat data

Poland: Promotion of solar collectors in household sector



Name of the regulation: Promotion of solar collectors in household sector

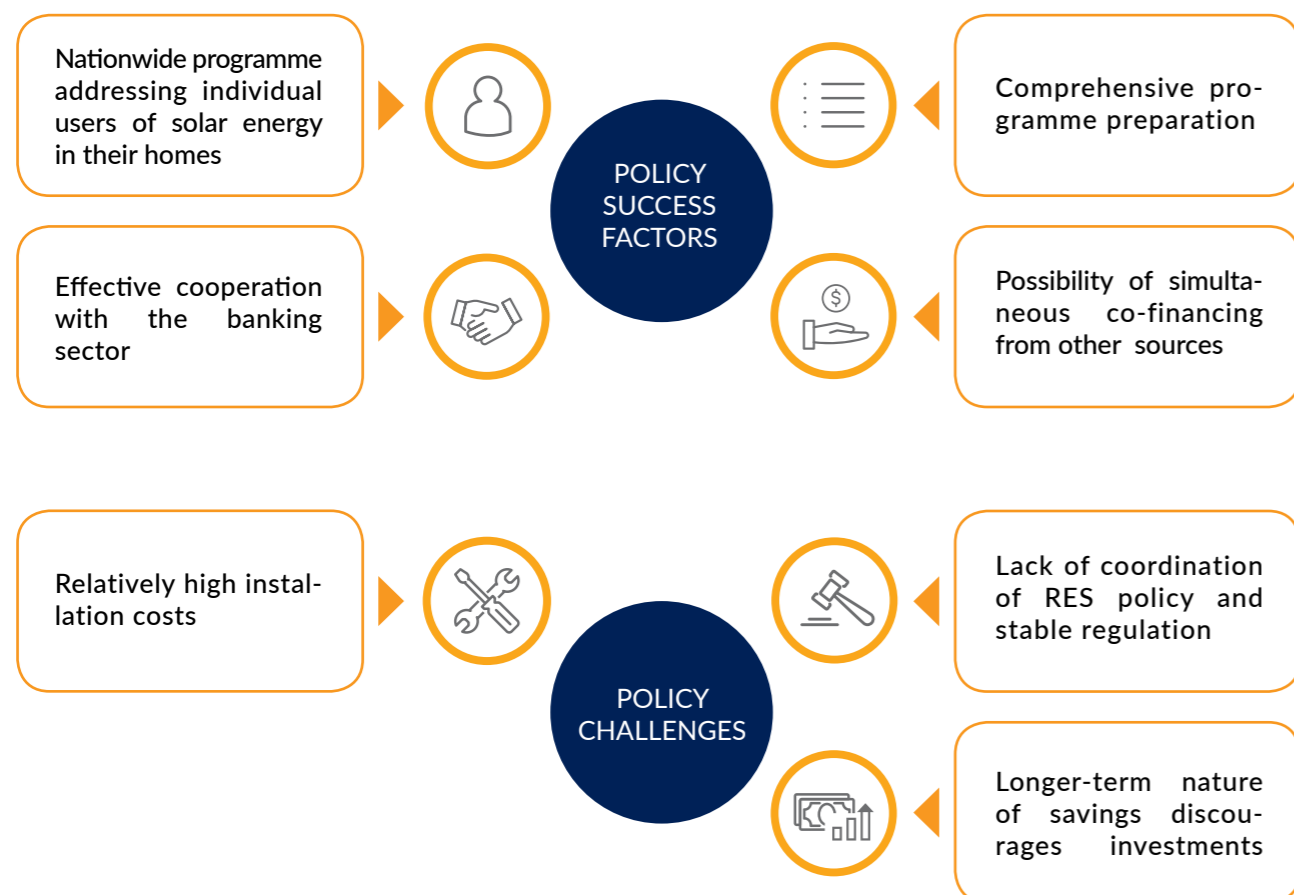
Category: financial

Timeframe: 2010 - 2015

The National Fund for Environmental Protection and Water Management (NFOŚiGW) launched programme payments to bank loans for **purchase and installation of solar collectors** in 2010. The main problem, addressed by the subsidy programme, is the high carbon footprint of households. The budget included **EUR 104 million** to pay grants in the form of loan agreements concluded in the years 2010-2014.

Silesian Voivodeship, which is one of the most polluted regions in Poland, is one of the main beneficiaries of the subsidy programme according to the number of installed solar collectors and its supplies - **17%** of all installation. The vast majority of domestic producers are located in the region of southern Poland, in particular in the Małopolska and Silesian province.

In 2015, after the finalization of the subsidy programme, **1047** solar enterprises were registered in the Business Navigator database, of which their number differed significantly between individual regions: Silesia has the largest number (**178**) of companies associated with solar industry.



RESULTS AND IMPACTS

According to NFOŚiGW statistics from 2014, within the project, the solar energy replaced mostly hard coal (**61%**) and natural gas (**18%**).

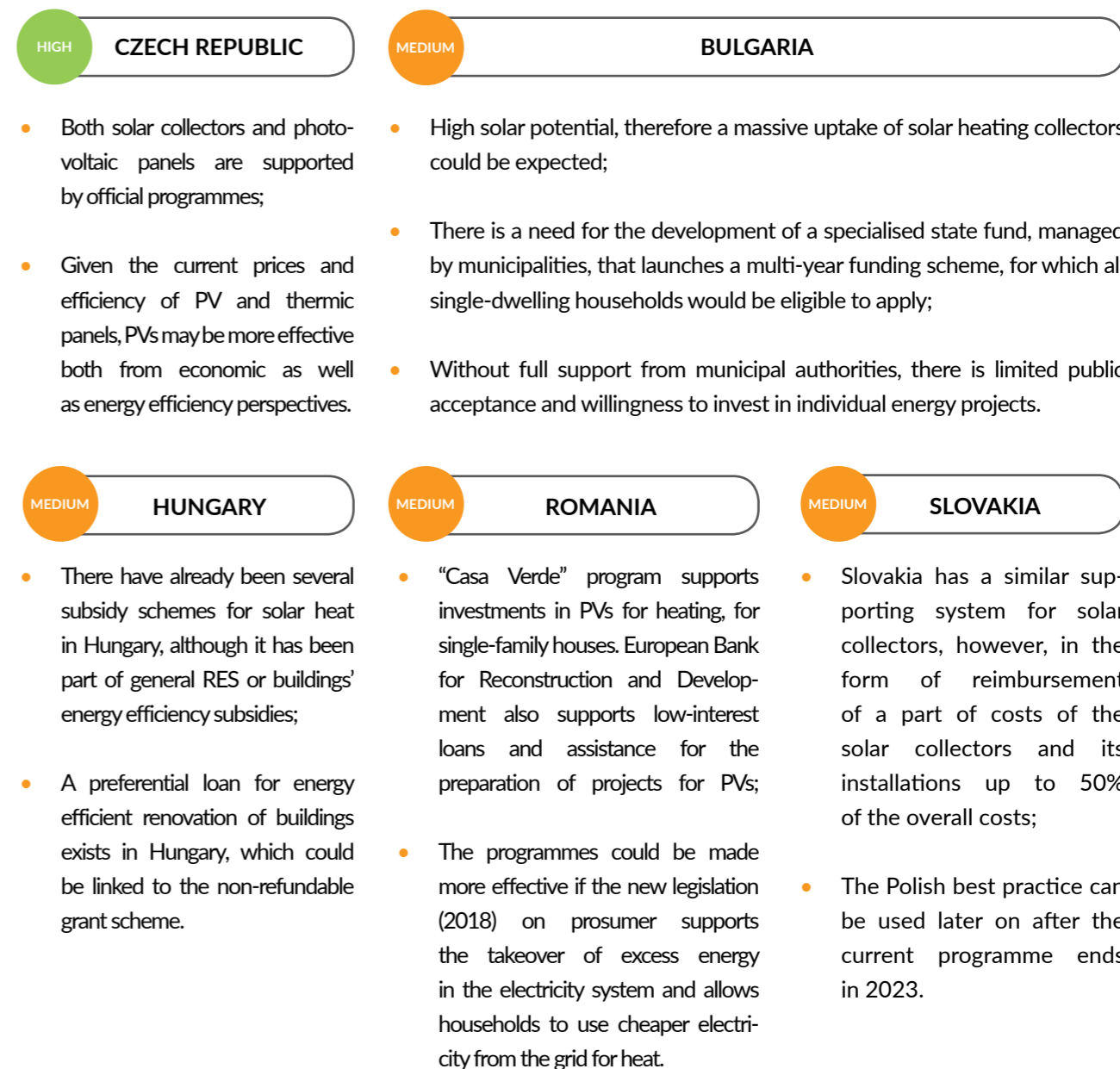
Grants from NFOŚiGW contributed to **35%** of all installations of solar collectors in Poland.

Significant increase in collector sales - Poland rose from **9th place** in 2009 to **3rd** in 2012 among European countries.

The results of the programme overachieved the assumed target. Over **67,000** installations were completed, which contributed to reduce approximately **75.1 kt CO₂ emission** per year for 2010-2014.

Accelerated industry development and emergence of new companies on the market, which contributed to the employment growth in the solar collector industry.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES





Share of heat pumps in final energy consumption

In terms of the share of heat pumps, the clear leader in the CEE region is the **Czech Republic**. Czech Republic was the only country following a similar path to the EU average in introducing heat pumps since 2003. Compared to Germany, Czech Republic performs **slightly worse (1.4% share compared to Germany's 1.8%)**.

Regarding the volume of energy obtained from heat pumps per capita, the Czech Republic surpasses the EU average at **9.4 toe** per thousand inhabitants (compared to EU's 8.8) in 2017. Germany recorded higher scores in both the share in final energy consumption (1.8%) and the volume per capita (12). The figures for Hungary and Poland are both approximately **9 times lower** than for the Czech Republic.

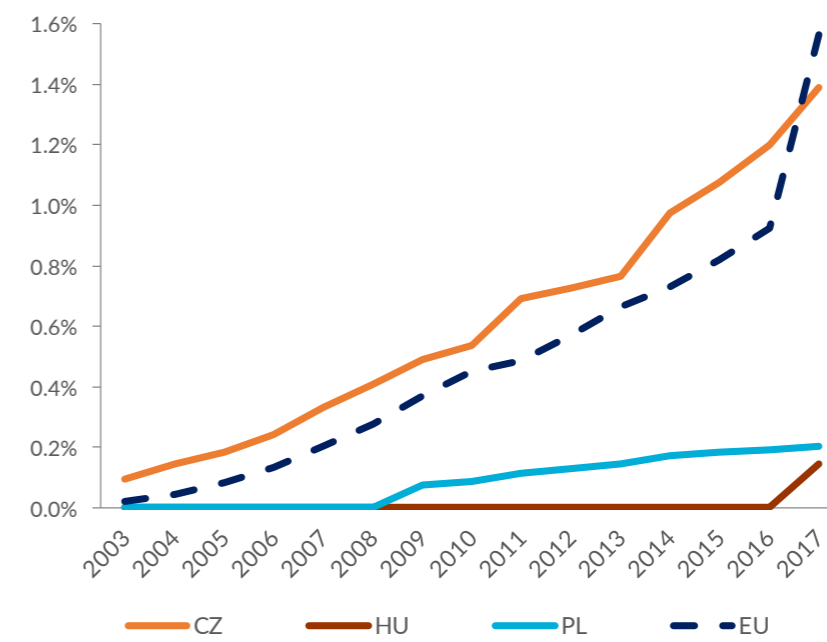


Figure 21. Share of heat pumps in final energy consumption, 2003-2017

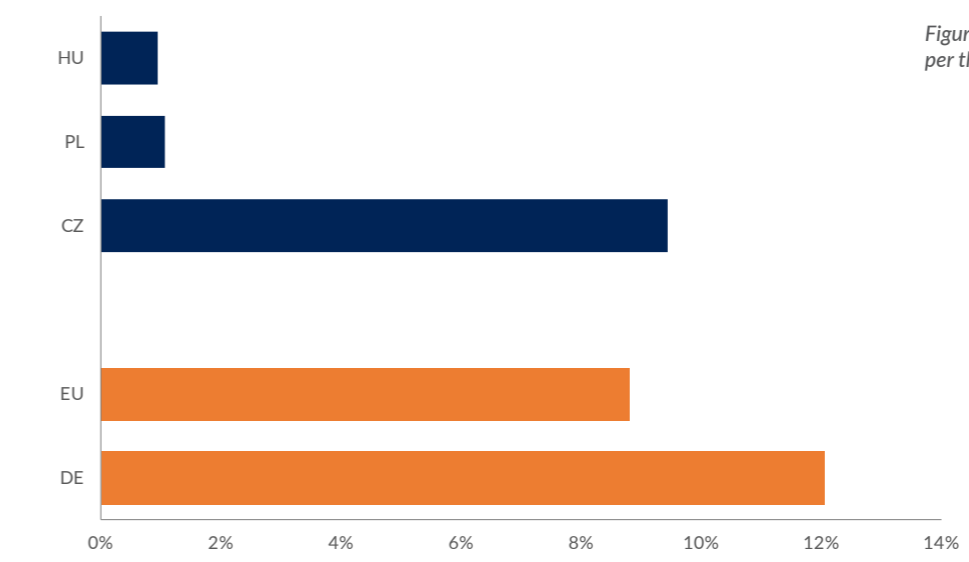


Figure 22. Ambient heat (from heat pumps) per thousand inhabitants (toe), 2017

Source: WiseEuropa based on Eurostat data

Czech Republic: New green savings and Boiler Subsidy



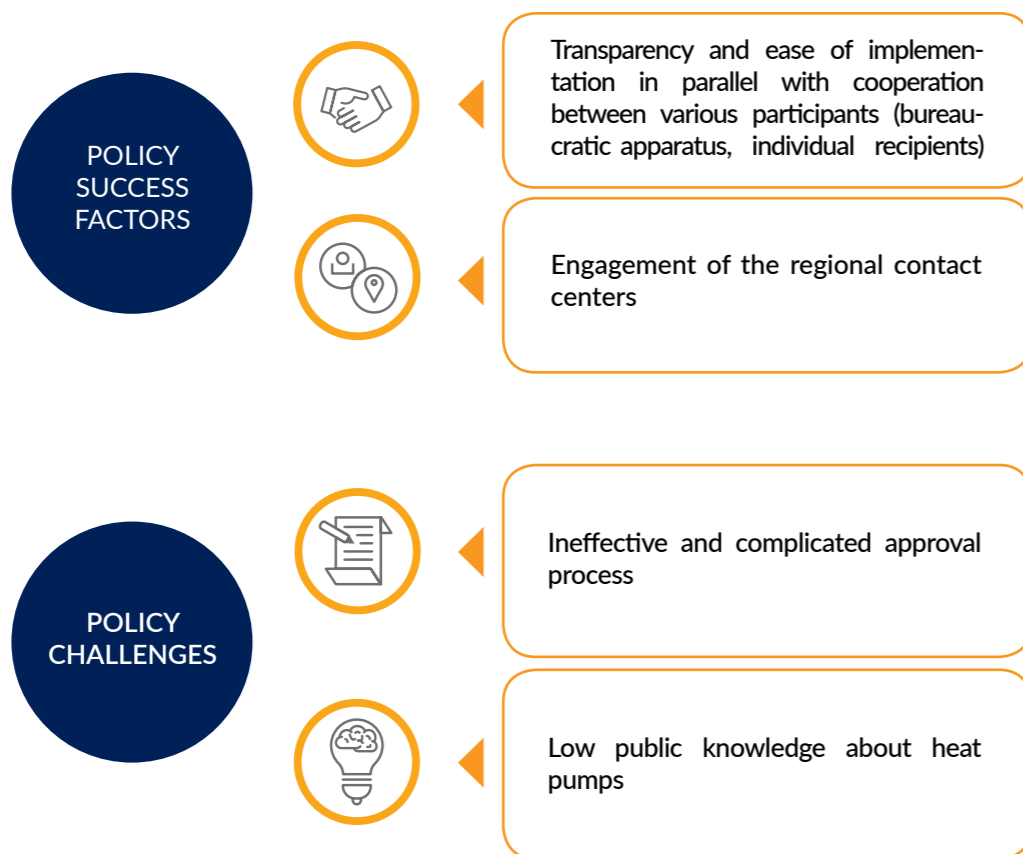
Name of the regulation: Zelená úsporám/Nová zelená úsporám 2013/Nová zelená úsporám (New Green Savings) and Kotlíková dotace (Boiler Subsidy)

Category: fiscal, financial

Timeframe: 2009 – present

The New Green Savings objective is to improve the state of the environment by reducing the production of pollutant and greenhouse gas emissions, as well as to increase heat production from renewable energy sources by 3.7 PJ. Other objectives were to create or maintain **30,000** jobs and to improve the housing conditions for **250,000** households.

The “best practice” of a heat pump installation in the Czech Republic would be a hybrid installation where the technology is present as part of a complex, smart energy unit supplying a modern passive house with an emphasis on efficiency and energy savings. Presented passive house is a new building in the village Zlonín situated 7 km Northwest of Prague. The main element of heating, cooling, ventilation (HVAC) and water warming system is a unit with regulatory module connected to AC unit installed outside the house (air/water heat pump). For water heating, separated solar panels are installed and the pipes for the heated water are connected to a water tank that can also be heated with the heat pump unit, as well as by electricity from the PV panels/batteries/grid. Construction of the house was supported from the New Green Savings program with the amount of ca. **EUR 17,250** and ca. **EUR 5750** for the hybrid system combining PVs and the heat pump unit for heating the house as well as water.



RESULTS AND IMPACTS

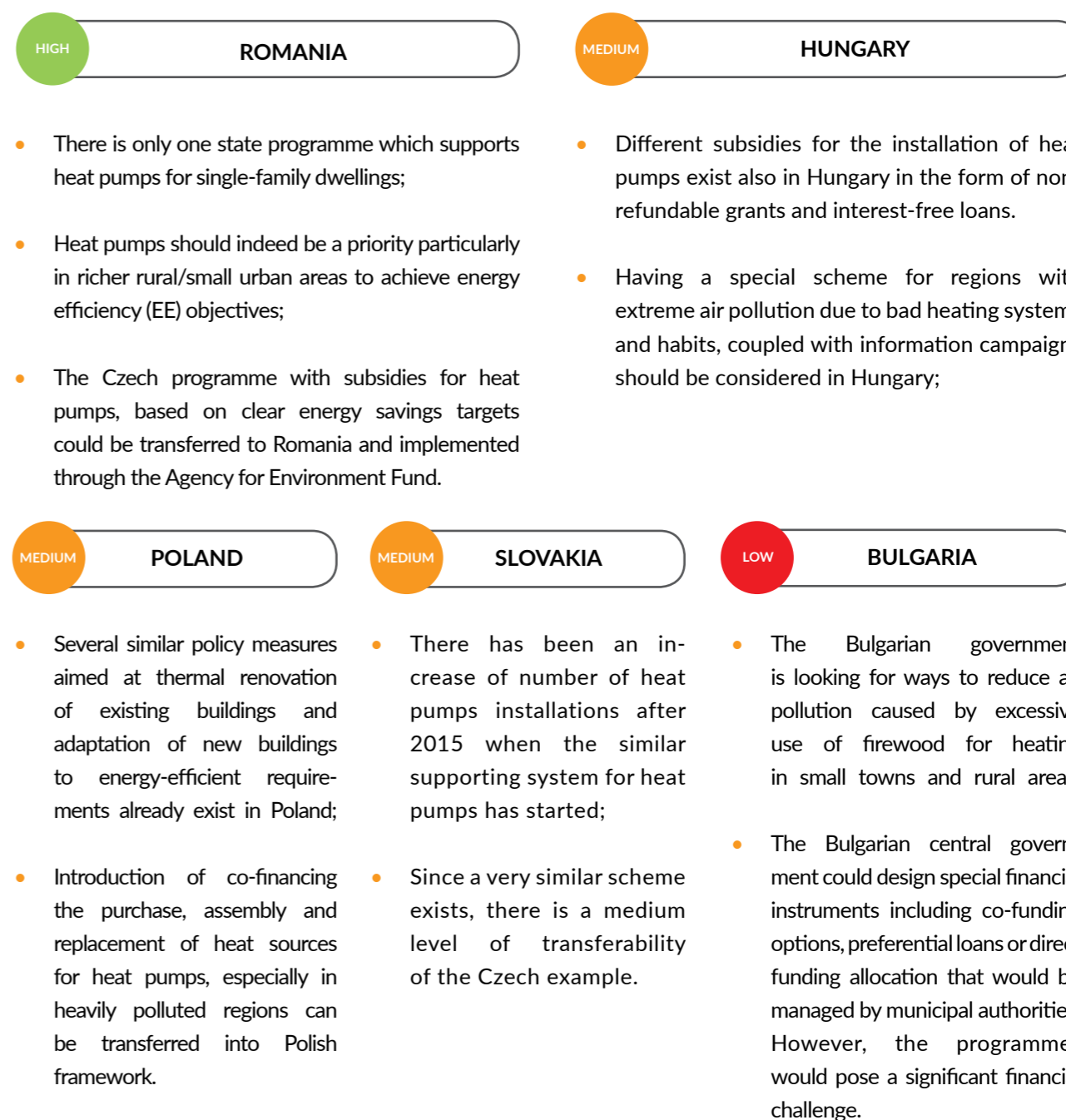
New Green Savings: 3.36 PJ energy savings and 384,000 t of annual CO₂ savings every year.

Overall, between 2010-2017, **15 094** heat pumps were supported by either the first, or the second subsidy scheme.

Between 2010-2017, **7225** heat pumps were supported from the **Kotlíková dotace** and **43,396** old polluting solid fuel heating boiler were replaced by new ones (**30%** heat pumps).

In 2010-2017, a total of **7869** heat pumps were subsidized from New Green Savings programme.

APPLICABILITY OF GOOD POLICY PRACTICE IN OTHER CEE COUNTRIES





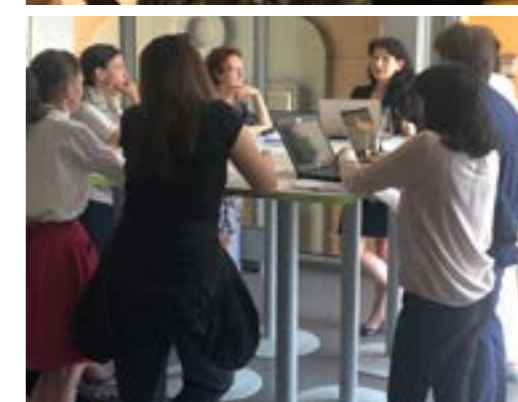
Regional stakeholder workshops in Warsaw and Bucharest

In early July 2019, representatives of public administration, business, analytical centres and non-governmental organizations from Romania, Bulgaria and countries in the Visegrad group had a chance to engage in a knowledge exchange on best practices for climate action in the transport and buildings sector during the first interactive regional stakeholder workshops held in Warsaw and Bucharest.

During the workshops, participants were divided into parallel working groups, in which they discussed the applicability of the good policy practices across the CEE region, and establishment of next steps in buildings and transport sectors with particular insights into four areas: electromobility, sustainable transport modes, energy efficiency in buildings, and clean heating sources in buildings.

The identified transport sector challenges include a large number of imported old diesel cars, railway infrastructure underfunding, lack of infrastructure and of a coherent policy to discourage purchases of diesel vehicles or loss of local public transport connections. Several solutions based on regional good practices were proposed, including linking all clean vehicles subsidy schemes with scrap obligations, disincentivising import of most polluting cars with adjusted taxes and levies, enhancing coordination of public transport development and operation between regions, municipalities and national-level entities (harmonisation of schedules, single tickets), as well as supporting the research and development in this area.

In the buildings sector, problems such as energy poverty, absence of legislation to support renewables use for heating in buildings, ambiguity in financing schemes or ineffective certification could be eliminated by, among others, the introduction of harmonised standards, conducting ex-post evaluations of retrofit programmes and supporting intersectoral cooperation.



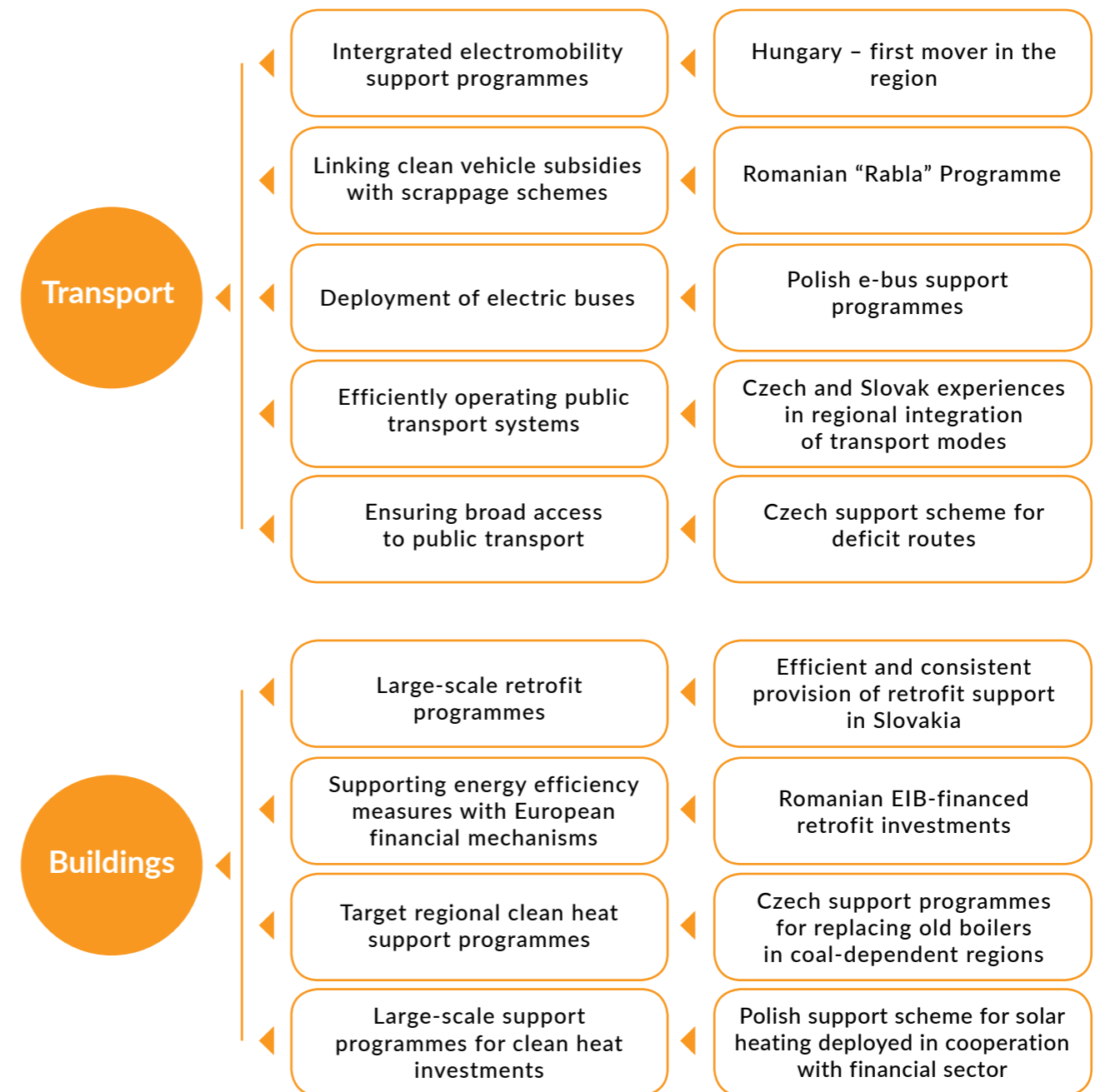
Summary





Summary

There are numerous opportunities for the CEE countries to learn from each other when it comes to climate-friendly policies both in the transport and buildings sector. This report has described some of the most promising areas of intra-regional cooperation and knowledge exchange across various measures supporting low-emission transition on the sectoral level. Some of them cover systemic, overarching approaches (such as public transport support in the Czech Republic or Slovak retrofit programmes) which enable broader shifts of energy and emission indicators on a national scale. Others provide examples of efficient implementation solutions which allow to target the public funds where they are most needed or distribute them rapidly on the large scale (e.g. Czech and Polish clean heat support programmes). Finally, the CEE countries can learn from the experiences of the regional first movers, such as Hungarian or Polish electromobility support programmes.





WiseEuropa (implementing organisation) is an independent think-tank and research organization based in Warsaw that undertakes a strategic reflection on European politics, foreign policy and economy. The mission of WiseEuropa is to improve the quality of Polish and European policy-making as well as the overall business environment by promoting the use of sound economic and institutional analysis, independent research and evidence-based approach to impact assessment.

Website: www.wise-europa.eu/en



Climate Analytics is a non-profit climate science and policy institute based in Berlin, Germany with offices in New York, USA, Lomé, Togo and Perth, Australia, which brings together interdisciplinary expertise in the scientific and policy aspects of climate change. Climate Analytics has an established track record in the qualitative and quantitative assessment of climate policies in different sectors and countries. By contributing to the Climate Action Tracker, the organization has assessed the impact of different policies on emissions reduction and the compatibility of the climate action with the climate goals. In a number of different projects it proposed sectoral policies for the effective emissions reduction.

Website: www.climateanalytics.org/



Climate Strategies specialises in bringing together multiple stakeholder groups (e.g. leading researchers, government, industry leaders) around key climate and energy policy issues. Its work focuses on regional aspects of the EU climate and energy policy, establishing dialogues and interfaces between research and policy making, ensuring clear and understandable content between all target groups. Climate Strategies also has members and partnerships in the following countries in the CEE region: Poland, Hungary, Czech Republic, Slovakia, Bulgaria, Romania, Estonia.

Website: www.climatestrategies.org/



Expert Forum is a think tank specialising in policy analysis and public administration reform on multiple sectors, including energy and climate change, in Romania and neighbouring countries (mostly Balkans, Moldova, Ukraine). It organized public debates in Bucharest and other small and large cities to advocate for energy efficiency in buildings, energy efficiency in households, energy market liberalization vs. energy poverty and has substantial experience in stakeholder analysis and engagement, at the central and local level, on energy and climate change issues. Expert Forum has also built successful advocacy campaigns for the full implementation of the EU's energy and climate policies in Romania and in the CEE region (e.g. Moldova), whilst also developing strong contacts in Brussels.

Website: www.expertforum.ro/en/

Energy, Climate and Environment Programme

Poland, Europe and the world are currently facing unprecedented challenges associated with the environment and resources. Avoiding dangerous climate change, improving public health and increasing resource security requires a profound economic transition. Taking advantage of opportunities and avoiding the associated developmental traps requires in-depth evaluation of the short- and long-term impacts of environmental protection and natural resource management policies. Under the Energy, Climate and Environment Programme, we prepare comprehensive sectoral and macroeconomic analyses, focusing on the broadly defined low-emission economic transition in Poland and globally. We are active in areas such as: Polish and EU energy and climate policy, domestic resource policy, improving resource efficiency in the economy, protection of the environment and public health by limiting harmful emissions, sustainable transport policy. This paper is a part of the Energy and Climate Project.



ENERGY, CLIMATE AND ENVIRONMENT