



*Conference*  
**Report**

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# WELCOME AND INTRODUCTORY REMARKS



**Alexander Duleba**, CEEC Director and Analyst at the Research Center of the Slovak Foreign Policy Association, talked about the 15 year history of the Conference and its energy policy agenda, which was initially focused on security of supply following the gas crisis and has gradually shifted to the centrality of the energy transition in economic change. He emphasised that the **energy transition is not just about economics and politics, but also about identity and how to tackle climate change**. He thanked Prime Minister Eduard Heger and Mayor of Bratislava Matúš Vallo for their patronage of the Conference, and ministers from neighbouring countries and Slovakia for joining the debate, conference partners and then invited everyone to join in online.

## PANEL I. RECOVERY PLAN: AN OPPORTUNITY TO SPEED UP GREEN INVESTMENTS IN V4 COUNTRIES

*Chair:*

**Lívia Vašáková**,

Director General of the Recovery Plan Department,  
Government Office of the Slovak Republic

*Keynote:*

**Eduard Heger**,

Prime Minister of the Slovak Republic

*Speakers:*

**Anna Moskwa**,

Minister of Climate and Environment of Poland

**László Palkovics**,

Minister for Innovation and Technology of Hungary

**Marian Piecha**, Deputy Minister of Industry and Trade  
of the Czech Republic

**Lívia Vašáková**, Director General of the Recovery Plan Department, Government Office of the Slovak Republic, opened the panel by highlighting that the Recovery and Resilience Facility is a **unique opportunity to rebuild the economy under a strong environment and climate-friendly program**. The EU is not only facing the Covid-19 pandemic, but also climate change and the high energy prices that are complicating the transition to decarbonisation.

**Eduard Heger**, Prime Minister of the Slovak Republic, noted that green issues and the climate are a key long-term issue and that discussions over the coming decades will **need to be honest and multi-dimensional**. He drew an analogy with the post-World War II era, when the whole world's attention was on peace, cooperation and prosperity. Despite the great achievements, the planet and the environment have suffered and the issue of sustainability is a central concern today. He stressed that Europe leads on this, but climate change

does not affect only one continent and so **we cannot allow a large gap to emerge between those that are leading and those that are following**.

Slovakia was among the first countries to submit its Recovery Plan, which was rated highly by the European Commission. Under the Plan climate change will receive €2.7 billion or 43% of the funding. Energy poverty is still an issue in Slovakia and one of the biggest challenges. Nonetheless we **must do everything we can to achieve climate neutrality**. Renewables are one of the answers, and although they do not yet provide a sufficiently stable supply and are expensive, the cost has fallen over the past 10 years. **Nuclear is a very stable transitional source, but we cannot give up on the renewables goal**.

He also discussed other areas of green transformation, such as the end of coal in 2023, the need for cleaner mobility and advances in the use of hydrogen technologies. Under the Plan investment is focused on charging stations, buildings – including historical ones and homes, decarbonisation of industry, cycling paths and the transformation of national parks – the latter being an important element.

**Anna Moskwa**, Minister of Climate and Environment of Poland, stated that, whenever possible, the region should speak as one on transition and energy efficiency. Poland's Plan has yet to be approved by the European Commission. **Decarbonisation and renewables are crucial for Poland** including changing the regulatory framework for investment – to make it environmentally and energy prosumer friendly. Off-shore wind energy will be a key interest, along with the development of smart infrastructure and storage facilities and the modernisation of the power system. Hydrogen technologies, including the tabling of legislation on the **hydrogen market, could be a good area for regional cooperation**.



Improving air quality is both a priority and a challenge. It entails the extension of financial support, replacement of old heating sources, improvements in energy efficiency and green transformation in businesses as well as better energy efficiency in public buildings and reducing traffic congestion in city centres. With the adoption of an amended law on electromobility and alternative fuel vehicles, there are opportunities for cleaner mobility. Poland is open to **regional cooperation and to speaking with one voice** vis-à-vis the European institutions: the energy transformation will be more successful if it is implemented on a regional rather than a country basis.

**László Palkovics**, Minister for Innovation and Technology of Hungary, focused on industrial, business, technological and research opportunities and Hungary. The greatest **renewables potential is in photovoltaics**: installed capacity is in excess of 2,600 MW and over 500 MW of the 2030 target of 6 GW for large-scale and households has been achieved. Installation of PV for households is particularly encouraged under the Plan.

Hungary was the first country in the region to incorporate **climate neutrality into domestic law in 2020** and it plans to reduce emissions by 40% by 2030 compared to the 1990 figure and to achieve climate neutrality by 2050. All the legislation is already in place. The most important issues are energy efficiency and energy savings, electrifying the transport, residential and commercial sectors, investments in developing CCUS and hydrogen technologies, reducing landfill, making industrial and manufacturing processes more efficient and investing in research and professional training.

Hungary has approved its **National Hydrogen Strategy**. Hydrogen is important for storage, fuel and carbon reduction as well as in heavy industry. The **Hungarian Battery Strategy** is another project aimed at creating a sustainable, socially accepted battery value chain and competitive domestic industry, greening the transport system and research in biofuels and synthetic fuels.

László Palkovics also referred to steps to **pave the way to decarbonisation**, such as the introduction of the Emissions Trading Scheme for the building and road transport sectors bearing costs by the citizens. He stressed that **nuclear energy has to be considered a green source** if climate neutrality goals are to be reached. The safe application of nuclear technologies and waste treatment and natural gas has to be recognised as a temporary green energy source in the taxonomy regulations. The hydrogen strategy needs to build on the existing natural gas infrastructure.

**Marian Piecha**, Deputy Minister of Industry and Trade of the Czech Republic, presented the Czech implementation of its Recovery Plan. The plan has been approved and the country has received its first payment. The delivery unit is based at the Ministry, which is facilitating the processes in the energy sector. **The Plan involves all the ministries, with the exception of the Ministry of Defence and Ministry of Foreign Affairs.**

One positive aspect is that large businesses can apply for funding – in contrast to the structural funds that are focused on SMEs; however, there is a risk of a conflict of interest. The Plan consists of six pillars. The second pillar relates to the green transition in transport, energy efficiency,



clean energy sources, building renovations, nature protection and climate change adaptation, the circular economy and biodiversity. In terms of clean energy sources the **focus will be on photovoltaics** – to which 5 billion CZK has been allocated – and the modernisation of heat distribution in district heating systems. **Natural gas remains an important source**, especially in the switch away from coal. Photovoltaics will also receive support under the Plan, including in Prague, which is excluded from the structural funds.

**Eduard Heger** answered a question from the audience about heavy industry reforms. He stated that **industry forms the backbone of the country** and that we should be building on this and carefully introduce decarbonisation solutions. Reforms are an important part of the Recovery Plan, for example legislation on renewables. He added that the technologies and innovations are developing rapidly and that we must not fear the decarbonisation goals, which are a long-term pursuit. **László Palkovics** agreed that the energy intensity of national economies is an issue and international and local companies differ in this. The state ownership of energy providers, such as MVM Group, is beneficial when it comes to the energy obligation scheme and achieving energy efficiency among disadvantaged groups. **Marian Piecha** said that the targets should be met by focusing on the results and not the regulations.

When it comes to natural gas, **Eduard Heger** stated that we must first focus on the transition period – the end of coal – and then on gas. **László Palkovics** answered a question about CCUS, stating that it was still at the beginning stage and that synthetic fuels must also be considered, **Marian Piecha** added that subsidies are required if the technology is to be feasible, and that the transition to green heating system should be a major focus.



## PANEL II.

# CITIES AS IMPORTANT ACTORS IN TACKLING CLIMATE CHANGE

*Chair:*

**Artur Bobovnický,**

Director of the Innovation and International Cooperation Section, Slovak Innovation and Energy Agency

*Speakers:*

**Matúš Vallo,** Mayor of Bratislava the Capital City of the Slovak Republic

**Zdeněk Hřib,** Mayor of Prague the Capital City of the Czech Republic

**Gergely Karácsony,** Mayor of Budapest the Capital City of Hungary

**Olaf Osica,** Acting Managing Director, Strategy & Analysis Office, City Hall, Warsaw, Capital City of Poland

**Stelios Diakoulakis,** Deputy Regional Director, Europe – C40 Cities

**Artur Bobovnický,** Director of the Innovation and International Cooperation Section, Slovak Innovation and Energy Agency, underlined that the Covid-19 pandemic had hastened the fight against climate change in cities. Despite the challenges, city leaders recognise that there is a need to rebuild cities to **accelerate the shift to zero carbon and address social inequalities**. The cities of the future will be highly connected, automated and sustainable, which will mean the use of clean energy systems, better energy efficiency in buildings, adopting the circular economy principles and climate change mitigation.

**Matúš Vallo,** Mayor of Bratislava the Capital City of the Slovak Republic, said that it was important to deliver the promised professional governance in cities and draw a line under the corruption and bad governance of the past. This is important especially when governments are dragging their feet on climate issues. There is also the threat of populism and post-truth reality. **The climate crisis is also a crisis of democracy** that can be overcome by a completely new political culture and changes in life.

Effective policy change at the city level will improve the lives of citizens by providing clean air, better public transport and economic opportunities. Bratislava has unsustainable mobility levels, which are being addressed through improvements in public transport, the adoption of environmentally friendly transport modes, a parking policy and bike routes. **New measures should be adopted transparently and communicated properly.**

Cities are sometimes more efficient than central government in dealing with crises, including the current pandemic, where **trust is crucial**. Sustainability is improving and Bratislava is investing in public spaces, through projects such as Living spaces, public schemes involving inhabitants such as tree planting and energy efficiency, and decarbonisation projects. International agreements should involve citizens and local communities and EU funds

should be appropriately targeted so environmental measures can be achieved.

**Zdeněk Hřib,** Mayor of Prague the Capital City of the Czech Republic, presented Prague's climate mitigation plans. The Czech Republic may appear to be somewhat sceptical of ambitious climate goals and green transition, but that is not true of Prague. The city has decided to **lead the green transition in the country**. Prague has the potential to inspire other regions and government in the green transition. In 2019 the city pledged to cut emissions by 2030 and reach climate neutrality by 2050 and this year the council adopted a Plan containing 69 specific measures to fulfil the pledge by 2030.

There are four pillars: sustainable energy in buildings, transport, circular economy, and greenery and water elements in public spaces. The city is concentrating on the use of renewables, ending the use of coal in the heating system by 2030, exploiting energy potential from wastewater treatment, renewing the city fleet, introducing new tram and metro lines, building charging infrastructure and a new biogas station and expanding reuse centres. The city is also on track to meet its target to plant million trees by 2026. **Implementing these measures will create new jobs, the city will be more energy sufficient and they will bring health benefits.** Discussions about climate change should involve local communities and a just transition must be achieved.

**Gergely Karácsony,** Mayor of Budapest the Capital City of Hungary, said the problem of climate change is related to the problem of democracy and the **question of climate change can only be tackled successfully when the problem of democracy is tackled** with citizen engagement.<sup>1</sup>

**Olaf Osica,** Acting Managing Director, Strategy & Analysis Office, City Hall, Warsaw, Capital City of Poland, said that Warsaw was more committed to green goals than the country as a whole is. The green agenda was introduced to improve living standards, but it **cannot change Poland's**



<sup>1</sup> Unfortunately the conference organisers had technical problems with the interpreting, which meant that Mayor Gergely Karácsony's presentation had to be cut short.

energy mix, so although Warsaw can introduce electric buses, the electricity is still produced in coal power plants.

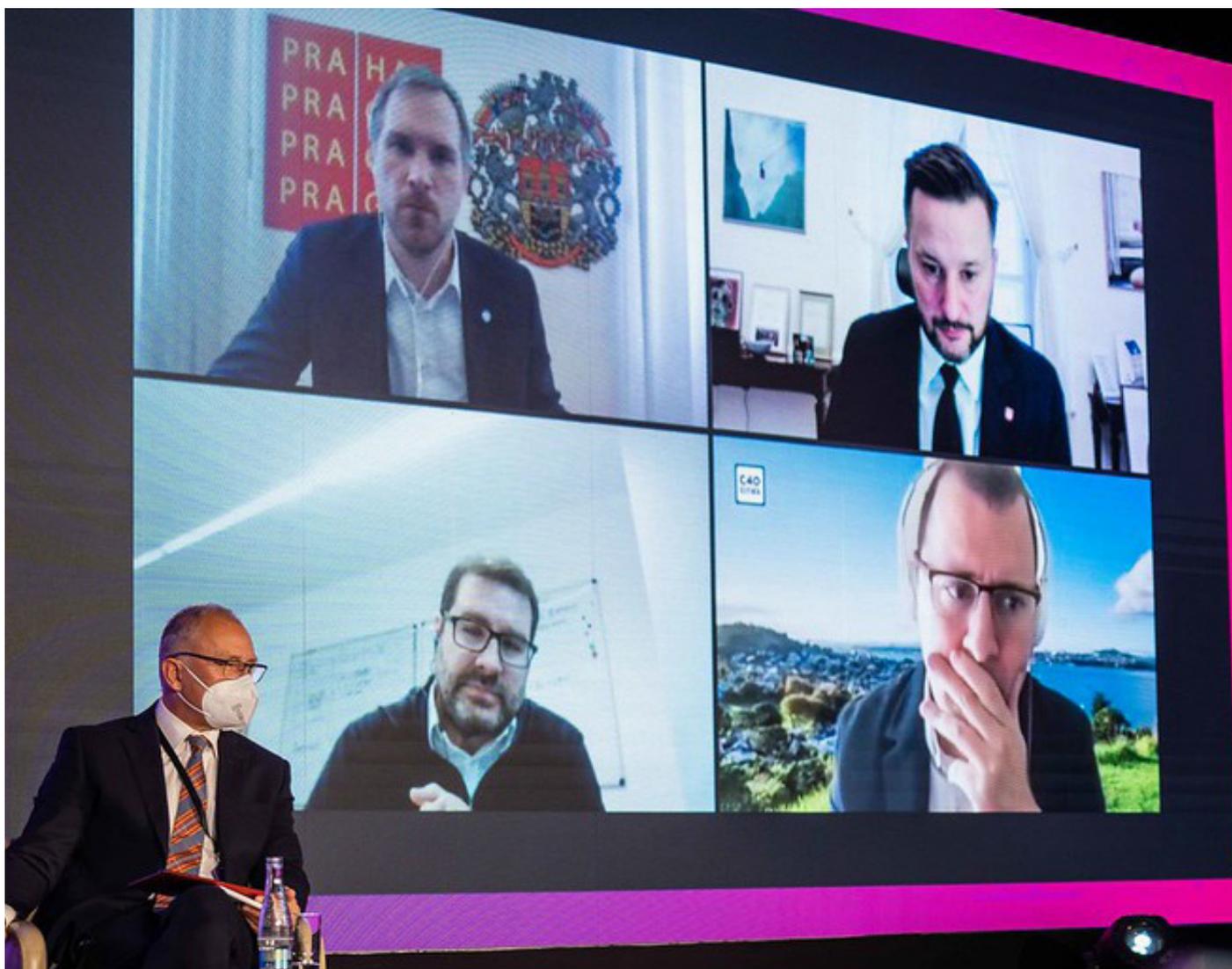
Warsaw has joined the EBRD Green Cities initiative and is developing a green city climate action plan – a strategic document entitled Green Vision of Warsaw – relating to the key areas of transport, infrastructure, buildings, waste, spatial planning, energy and construction. It has also declared that it will achieve climate neutrality by 2050.

Public transport is an essential element, with almost 1,000 buses – around 70% of which are electric – the opening of a second metro line with work underway on a third, and plans to have planted one million new trees by the end of the mayor's electoral term. Some of the main challenge are financing, lack of access to cohesion funds, and pollution from old coal stoves in adjacent areas.

**Stelios Diakoulakis**, Deputy Regional Director, Europe – C40 Cities, talked about the organisation C40, which is a global network composed of 100 cities committed to delivering urgent action against the climate crisis. Cities are important as they consume around 75% of the world's energy, create over 70% of energy related GHG emissions and generate 80% of GDP. C40 is guided by the principles of the global green deal: **recognition that there is a global climate emergency, a commitment to limit global warming to 1.5°C, creating local communities and inviting other actors to join.** C40 has launched several dec-

larations, such as Green and Healthy Streets, Renewable Energy – Powering Green and Just Cities – and Urban Nature.

According to **Zdeněk Hřib** it is crucial that the debate on the green transition is changed in the Czech Republic – which is no easy task. Participatory tools that enable public involvement are important, such as tree planting projects or citizens' participation in introducing more installations of renewable energy. **Matúš Vallo** added that Bratislava is spending money on maintaining old trees in the city's woods. Green initiatives follow energy promises: some of these are not very popular, such as the car parking policy. **Olaf Osica** said that the game changer in green policies would be having the government on side. Coal is the biggest issue. He agreed that car traffic is an issue and that it is important to persuade people to switch to public transport, and that has to be of good quality. Energy poverty is another issue, and making it both **green and affordable** is difficult. **Artur Bobovnický** added that it is often a question of gaining support for unpopular decisions as well as popular ones. **Stelios Diakoulakis** replied that it is crucial to keep citizens informed and raise awareness of the benefits, such as better quality of life, better air and the economic benefits. **Zdeněk Hřib** highlighted the problem of cities not having the competences to decide on key issues relating to urban planning. **Olaf Osica** concluded that it is essential public services are green and clean, which also improves life quality.



# LUNCH SESSION. THE ROLE OF NATURAL GAS IN THE V4 REGION UNDER THE FIT FOR 55 PACKAGE

Chair:

**Richard Kvasňovský**,  
Executive Director, Slovak Gas and Oil Association

Speakers:

**Ferencz I. Szabolcs**,  
Chairman of the Board and CEO, FGSZ

**Milan Sedláček**,  
Head of EU affairs and Strategy, eustream, a. s.

**Christian Redl**, Senior Associate European Energy  
Cooperation, Agora Energiewende

**Péter Kotek**, Senior Research Associate,  
Regional Centre for Energy Policy Research (REKK)

**Richard Kvasňovský**, Executive Director, Slovak Gas and Oil Association, said that natural gas still plays an important role in V4 countries and the Fit for 55 Package conflicts with the principle of technological neutrality. There is criticism of introducing the ETS system in buildings, but nonetheless **decarbonisation is a great opportunity for modernising the energy sector and could be the solution to reducing dependence.**

**Péter Kotek**, Senior Research Associate of REKK presented a **study on gas flows in the V4 countries.** Natural gas is both part of the decarbonisation solution and a problem, as a replacement will have to be found in the end. The golden age of gas infrastructure development was 2014–2020, supported by Projects of Common Interest. V4 projects received substantial support and there are also plans for further investments.

**Traditional flows are diminishing** in the Czech Republic and Hungary, and in Poland and Slovakia flows to the West are expected with the commissioning of Nord Stream 2. Physical flows to Ukraine have also decreased rapidly. The Yamal pipeline was the eye of the storm in the gas market in October and November 2021, with Russia able to exert constraints on the EU supply and manipulate the price. The domestic sector may be sheltered where the gas had already been contracted before the price hike, whereas industry may feel the effects of the high prices earlier. **High prices could speed up decarbonisation and energy efficiency measures.**

**Ferencz I. Szabolcs**, Chairman of the Board and CEO, FGSZ, said that it was hard to predict the long-term position of natural gas because of **market volatility, shortages and supply constraints.**

The ENTSO-G Security of Supply Simulation report states that we do not have a security of supply problem but a problem with market volatility. However, the CEE region would prove resistant against any major disruption.

It is not clear how the EU wants to move forward on the energy transition or how it will achieve the goal of climate neutrality by 2050, including the question of how natural gas will be categorised under the taxonomy rules. He argued that it **would be very unwise to exclude gas-fired power plants from the list for our region as we can do a lot of decarbonisation by switching from coal to gas**, which is the clear trend in all countries. V4 countries share similar concerns on the energy transition, and natural gas





remains an important element as the infrastructure is already well developed.

**Milan Sedláček**, Head of EU affairs and Strategy, eustream, a. s., agreed with most of Péter Kotek's observations and added that the fall in gas volumes in Ukraine is temporary. It is caused by market patterns and dynamics, not transit. He talked about the **future role of the gas infrastructure** and the fact that the three pillars of EU energy policy are affordability, security and sustainability. After the 2009 crisis, transit companies focused on energy security and the simple narrative of clean gas is no longer sufficient instead the emphasis is on sustainable energy.

**Natural gas is an important bridging fuel** in Central and South Eastern Europe and is expected to remain so in the medium term because it is a **socially affordable way of fulfilling decarbonisation goals**. Blending natural gas with renewable gas and hydrogen is a good way of reducing the cost of the energy transformation. Reducing methane emissions is essential and eustream has decreased these by more than 70% in the last 10 years. All players in the gas sector should contribute to this.

**Christian Redl**, Senior Associate European Energy Cooperation, Agora Energiewende, said that the EU commitment to become carbon neutral also applies to natural gas, the use of which will be limited after 2040. Key issues are priority uses for natural gas and renewable gas and hydrogen, cost-effective alternatives to natural gas and implications for infrastructure and public support. **Electrification and energy efficiency are the most effective means of achieving net-zero GHG emissions**. Renewables should account for 80% and up to one quarter of that should be hydrogen and its derivatives with priority uses for decarbonising industry, shipping and aviation, and firming up the renewable-based power system. The usage of hydrogen is controversial in high temperatures in industry,

heavy road transport and trains, so it is better to use electricity in low heat industry, cars and heating buildings.

This has implications for the distribution network, with **very limited use of hydrogen in buildings in net-zero scenarios**. There are also difficulties with, for example, chemical processes that require pure molecules and blending. We have to consider long time investments in natural gas and other fossil technology and we need to focus on long-term planning to identify the scale of investment required.

**Christian Redl** agreed that high gas prices could speed up the decarbonisation process. **Péter Kotek** answered a question from the audience on the expiration of long-term gas contracts, saying that there was no real energy security issue in V4 countries because it has the infrastructure and long-term contracts may influence the market but not security. **Ferencz I. Szabolcs** answered a question on changing direction of flow, saying that transit has already diminished, but will change in the future and flows will increase. **Milan Sedláček** agreed that change in flow is already a reality, but the number of customers has increased substantially and the company has been rebuilt to adapt to these changes.

**Péter Kotek** answered a question on hydrogen, saying that the new infrastructure will not be as interconnected as today's gas infrastructure and that the market will be different. Synthetic gases also present a challenge, given their economic viability. Regarding the Fit for 55 package he said that financing the gas infrastructure might be an issue. **Ferencz I. Szabolcs** added that the package is focused more on reducing demand. **Christian Redl** thought the biggest challenge would be energy planning and **Milan Sedláček** concluded that the most important thing is having a stable and predictable regulatory framework.

## PANEL III. PRESENTATION OF *WORLD ENERGY OUTLOOK*

*Chair:*

**Ingrid Brocková,**  
State Secretary, Ministry of Foreign and European Affairs  
of the Slovak Republic

*Speaker:*

**Tim Gould,**  
Chief Energy Economist, International Energy Agency

*Commentary:*

**Matúš Mišík,**  
Research Fellow, Slovak Foreign Policy Association and  
Associate Professor, Comenius University in Bratislava

**Ingrid Brocková**, State Secretary, Ministry of Foreign and European Affairs of the Slovak Republic, stressed that the 2021 report was designed to **support discussions at the COP26 conference** and provides an **overview of the journey countries are making towards the energy transition**. The energy sector plays a crucial role in climate change mitigation as it produces almost three quarters of emissions and, despite all the pledges, current progress is still too slow to achieve the commitments.

**Tim Gould**, Chief Energy Economist, International Energy Agency, began with a summary of the current pro-

blems: the economic recovery is resulting in a sharp spike in prices, weather-related factors, an emergent new global energy economy and energy access. **Climate ambitions are high, but do not match the energy and emission data**. New policies, the fall in technology costs and the pandemic have all pushed the projected emission curve downwards. Updated pledges, such as that made in Glasgow, are decoupling emissions and economic growth this decade. The new pledges will reshape global energy markets, with more rapid deployment of renewables and oil and gas peaking in the next decade or so.

Coal remains the main source of CO<sub>2</sub> emissions and the **first task is to halt the construction of new coal-fired power plants**. For example China has announced it will stop financing coal power plants abroad. Currently there are around 9,000 coal power plants in operation in nearly 100 countries and there is a need to tackle these emissions as well.

**New-energy related commodities** are on the rise, such as minerals used in batteries and clean technologies, or hydrogen. In the 2050 net-zero scenario that would mean the complete upturn of a market currently dominated by oil. There is a lack of investment in clean energy and infrastructure and this will have to be substantially increased, particularly in developing economies. Clean energy tran-



sitions can cushion consumers from the shock of oil and gas price spikes if energy efficiency measures are put in place and electrification is supported by governments. The energy transition presents an opportunity for businesses that can contribute by changing supply chains to ones based on renewables and new infrastructure.

**Matúš Mišík**, Research Fellow SPPA, noted the report's focus on climate policy and acknowledged its **criticism of governments' pledges** to mitigate climate change and slow down the rise in the global temperature. He commented on the following issues from a Central and Eastern Europe perspective: the importance of energy efficiency as one of the tools for closing the gap between governments' pledges and the 1.5 trajectory and a focus on energy sector innovations that could help CEE countries solve the challenges in energy security and innovation.

He argued that phasing out coal will be difficult in the region given the strong existing links between the mining industry and other sectors of society and the fact that energy security is experiencing a comeback in the region due to the events of the last quarter of 2021. **Energy security policies will remain important during the transition period** until decarbonisation is achieved. He highlighted the report's complex treatment of hydrogen, which is seen as a very important piece in the region's decarbonisation puzzle.

**Tim Gould** commented on the future of nuclear in the energy transition and observed that the **challenge is the advanced age of existing facilities** – by 2040 over three quarters of the facilities in advanced economies will have been operating for in excess of 50 years. In some countries this will lead to discussions on expansion. Technological progress has been made on small reactors and these will offer shorter construction and approval times and could provide flexibility and prove suitable for the electricity markets of the future.

Hydrogen is a very dynamic area that provides low carbon solutions for those sectors of the economy where decarbonisation is difficult and direct electrification impossible, such as aviation, heavy duty transport or shipping. There are lots of efforts to support the low emission production of hydrogen. He also commented on the EU's leverage to influence other countries' green energy transitions, and the importance of European leadership giving a good example, mobilising finance for the transition and creating incentives to accelerate the transition, whilst taking into account the social consequences. **Matúš Mišík** added that the position of developing countries is understandable, as they want to make use of cheap energy sources, but a good way to push these countries towards more ambitious climate goals is to introduce a carbon border adjustment mechanism.



## PANEL IV.

# GREENING STORAGE: HYDROGEN, BIOGAS AND BATTERIES

### Chair:

**Eva Majková**, Director at the Centre for Advanced Material Application, Slovak Academy of Sciences

### Keynote:

**Karol Galek**, State Secretary, Ministry of Economy of the Slovak Republic

### Speakers:

**Martin Bartošovič**, General Director, Nafta, a. s.

**Philippe Boucly**, President, France Hydrogène

**Ivan Gránsky**, Member of the Board of Directors, Slovenský plynárenský priemysel, a. s. (SPP)

**Patrik Kurilla**, Business Analyst, InoBat

**Tomáš Šimovič**, Optimisation Quant Team Manager, Slovenské elektrárne, a. s.

**Eva Majková**, Director at the Centre for Advanced Material Application, Slovak Academy of Sciences, outlined the panel discussion topics: efficient energy sources, renewables, batteries, hydrogen and fuel cell energy storage.

Karol Galek, State Secretary, Ministry of Economy of the Slovak Republic, emphasised that we live in an era **where energy is top of the agenda** because of energy prices and questions about the future of energy. Energy storage is key to facilitating distribution and transmission within the balancing system. There are several technologies available – batteries, electrolyzers for hydrogen production, power-to-gas or pumped storage power plants, such as the Čierny Váh power plant in Slovakia. He stated that the government approved the hydrogen strategy this year and that there will be periods when there is a surplus of nuclear-generated electricity that can be used for hydrogen production and gas storage is another option.

He said that the EU has 109 billion m<sup>3</sup> capacity in geological repositories and that if we used only a tenth of these to store hydrogen, we could get 33 TWh. **Gas infrastructure should be supported in the taxonomy**, as it will be used for synthetic gas in the future. Legislation is key. The winter energy package comments are being reviewed and should be transposed by mid-2022, including on energy storage. Accumulated energy will be considered deferred, which may enhance the appeal of investing in battery storage, for example. Flexibility will receive financial support under the Recovery Plan.

Philippe Boucly, President, France Hydrogène, presented France's plans and the challenges facing it in developing hydrogen. He noted that flexibility and energy storage are key in the transition to renewables, with **hydrogen being suitable for long-term seasonal storage**. Hydrogen will play a key role in both integrating renewables as well as decarbonising the economy. France's hydrogen strategy is focused on decarbonising industry, transport and R&D, with €9.1 billion in support by 2030. Hydrogen consumption will be concentrated in seven areas, with electrolyzers with a capacity of 6.5 to 10 GW and 1,000 to 1,700 hydrogen filling stations.

The main challenge in hydrogen development are the high costs. It is therefore **necessary to create a new market, including infrastructure**. An example is the European Hydrogen Backbone, which connects 21 countries and 23 transport companies. The principle of technological neutrality should also apply and low-emission resources such as nuclear, should be accounted for in the taxonomy. Hydrogen also opens up opportunities for the onshoring of industry.

**Martin Bartošovič**, General Director, Nafta, a. s. added that it was necessary to use the existing infrastructure, as





it was very expensive and so has to be used to the maximum.

According to **Tomáš Šimovič**, Optimisation Quant Team Manager, Slovenské elektrárne, a. s., the growing share of variable renewable sources means that residual consumption will have to be covered by other energy sources in the system. According to METIS studies, residual **demand for electricity will behave differently and require accumulation and flexibility if the electricity system is to cope**. The question is what sources will be used – batteries, water, gas, or electric cars and heat pumps. In some cases, it is more cost-effective for renewables to be cut off from the system. In Slovakia, we have existing sources of flexibility, hydropower and the existing infrastructure can be used if modernised.

**Karol Galek** added that from the state's point of view, it is important we keep our own technologies and ensure value for money. The point of the taxonomy is to ensure that we have sustainable technologies that will help achieve carbon neutrality by 2050. **Therefore, nuclear, which is emission-free, should be in the taxonomy.**

**Ivan Gránsky**, Member of the Board of Directors, Slovenský plynárenský priemysel, a. s., stated that the gas sector is interested in helping decarbonise. When the debate on solar panels began, it was believed that technological advances would reduce the cost of the equipment and that proved to be true. But with hydrogen, we do not feel that this is the case and its value will lie in helping achieve flexibility and regulation. That fits in well with wind and solar energy, and adding in hydrogen will make them much more predictable sources.

**When you convert electricity into electricity through hydrogen, there are relatively large losses and someone has to pay for them.** Putting these elements together and creating less demand for flexibility could create a cheaper source of energy than at present. In addition to hydrogen, the SPP is interested in biomethane, which is closely linked to waste management and has commercially viable by-products, such as fertilisers or products used in cement and construction.

**Patrik Kurilla**, business analyst at InoBat, said that in battery development, long-term research and development is producing results and providing solutions in industry or electromobility at relatively low prices. From a legislative point of view, the winter package will also change things and there will be new entrants in the electricity market who will be self-sufficient or act as producers. In industry, there are already commercially interesting projects that received no funding. **Decarbonisation therefore needs legislative support.** He highlighted the Czech Republic's Recovery Plan, which calls for the installation of solar panels.

**Philippe Boucly** commented that batteries are not suitable for seasonal energy storage, as they have a MWh capacity when what we need is TWh. The price of electrolyzers is also falling, and if we want affordable hydrogen, we have to reduce the price of electricity. **Tomáš Šimovič** added that the prices of batteries will determine the quantity in the electricity system.

**Martin Bartošovič** presented a project to produce a **10%:90% hydrogen-methane mix**. The mix was forced under pressure into an underground depository and after six months it was extracted and used to produce electricity. It is an example of how storage capacity can be used. There is a lot of talk about pure hydrogen storage, and salt caverns seem to be the most promising option. Light gas, a mixture of hydrogen and methane of up to 50% hydrogen, has already been stored, and can be stored in standard ways. With salt caverns, up to 100% hydrogen can potentially be stored.

**Karol Galek** stated that work on the Hydrogen Strategy Action Plan is currently underway, the Hydrogen Technology Center is being set up in Košice and legislative support is also being provided. **Patrik Kurilla** answered a question about the construction of the battery centre in Voderady, which is ongoing, and **Martin Bartošovič** was asked about CCUS and said a contract had been signed for a pilot project in eastern Slovakia. **Philippe Boucly** added that there is the ExxonMobil CCUS project in France, but that it is not a French government priority.

## PANEL V.

# RAIL TRANSIT AS THE BACKBONE OF SUSTAINABLE TRANSPORT

*Chair:*

**Ondrej Matej,**

Director, Institute for Transport and Economy

*Keynote:*

**Andrej Doležal,**

Minister of Transport and Construction  
of the Slovak Republic

*Speakers:*

**Tatiana Kratochvílová,** First Deputy Mayor of Bratislava  
the Capital City of the Slovak Republic

**Róbert Hudák,** Director of the Project Management  
Department, Železničná spoločnosť Slovensko a. s.  
(ZSSR)

**Pavel Páidar,** Director of the Construction Preparation  
Department, Správa železnic, Czech Republic

**Oldřich Sklenář,**

Research Fellow, Association for International Affairs

**Ondrej Matej,** Director of the Institute for Transport and the Economy, steered the discussion by asking whether rail will be one of the transport pillars, whether it is in fact green and reduces emissions, and what the financing situation is.

**Andrej Doležal,** Minister of Transport and Construction of the Slovak Republic, stated that **railway infrastructure is underfunded.** Even the funding from the Recovery Plan will be sufficient for only two lines, and investment debt alone exceeds €2 billion. The planned railway investment has an expenditure limit of 0.4% of GDP. The plan is to reinvest €5 billion over the next 10 years, but that is just

catching up, not infrastructure development. Goods transported by road accounts for up to 70% and that needs to change. However, that will only be possible with proper investment in the development of rail transport.

**Tatiana Kratochvílová,** the first deputy mayor of Bratislava, shares the view that rail transport attracts little interest, and that benefits no-one. **Bratislava suffers from poor air quality and transport is the main cause,** hence the need to find ways of use strengthening public transport. Successes have been achieved over time in urban public transport, and there are also discussions on expanding the capacity of the railway network, such as expanding passenger integrated transport terminals, increasing train capacity and frequency. The frequency and quality of long-distance connections is equally crucial.

**Pavel Páidar,** Director of the Construction Preparation Department of Správa železnic in the Czech Republic, provided an overview of infrastructure investments. The main means of achieving decarbonisation targets is **to increase the share of electrified lines,** which account for 3,217 km out of a total 9,377 km with the support of Eurofunds, and project preparations have begun on **high-speed lines.** These lines will free up capacity for the growing regional network of lines and represent an opportunity to stimulate economic growth. The project design envisages a maximum operating speed of 320 km/h and a minimum of 200 km/h. Key infrastructure projects for the Prague, Brno, Ostrava, Česká Třebová and Pardubice railway junctions, and transit corridors are at various stages of development.

**Investments are also being made to improve the safety of level crossings,** and this has led to a reduction in accidents, but the actual number of level crossings cannot be reduced for legislative reasons, among other things. In 2020, railway stations received record investment of 2.2 billion CZK. This year 114 buildings are being reconstructed for 1.74 billion CZK. **Preparations are also underway on converting the existing traction system,** which will save energy, by reducing the voltage to 25kV, 50Hz. But the trains also required modernising and there are plans to introduce the European train protection equipment ETCS. He agreed that European funding was absolutely key to track development.

**Róbert Hudák,** Director of the Strategic Project Management Department at ZSSK, provided an overview of investments in the train fleet, with the use of own resources of approximately €26 million per year and approximately €77 million per year from Eurofunds. Approximately €1 billion in EU resources has thus been invested, which is much more than the amount of own resources. The rolling stock needs modernising, as the average traction unit age is 20 years, and 21.5 years for the wagons. Rail is six times more energy efficient than road transport. **The problem is financing, we are catching up on neglected investments from the past, and we are also failing to follow up on investments with the change of government.** Andrej





**Doležal** responded by saying that the investment debt was accrued over 30 years of non-investment and the basic problem is the poor-quality infrastructure. When it comes to reducing emissions, investment is absolutely key.

**Oldřich Sklenář**, an analyst at the Association for International Affairs, discussed the **potential for increasing the share of renewable sources, specifically photovoltaics, in rail transport**. These can be used to power wireless sensors, cover the energy consumption of station buildings or to power the vehicles themselves. In the case of propulsion, vehicles may be equipped with a battery that is charged at terminals or photovoltaic cells integrated into the vehicle body. If the track is electrified, solar parks located close to the track can be used.

A clear advantage is the price of photovoltaics, which has fallen by 90%, and the peak performance of solar parks coincides with the peak in railway traffic. Disadvantages include the introduction of new technologies in a relatively conservative environment with high safety requirements, instability and the rusting of panels near the track. In India, photovoltaic use in station buildings is relatively widespread and covers the energy consumption. In Japan photovoltaic panels are placed along the track, and an Italian company integrates the panels directly into the railway sleepers. In the light of rising energy prices, these solutions may prove attractive.

**Andrej Doležal** answered questions about line modernisation, pointing out the benefits of high-speed lines in terms of job mobility and ease of travel. First you have to renew the line, do the reconstructions, remove any bottlenecks and only subsequently modernise and raise the line sections. **Tatiana Kratochvílová** added that everything has to be done gradually and to improve the appeal of public transport. **Andrej Doležal** also pointed out that Eurofunds have become a key tool for investing in public infrastructure, and the company has become accustomed to that. The question is where will the investment come from when they have gone. Expenditure on railway infra-

structure has to increase, even at the expense of road infrastructure, or money from the Environmental Fund could be used.

**Pavel Paidar** emphasised that the Czech Republic had managed to start investing because it needed to use the Eurofunds quickly, and this proved to be effective. Any reduction in travel time is crucial for passengers, and is good for rail investments. **Tatiana Kratochvílová** said that the transport development strategy had to be met, **Róbert Hudák** pointed out the need for investment, especially in infrastructure and **Oldřich Sklenář** added that there are positive externalities in railway transport, compared to road transport. **Andrej Doležal** agreed and concluded that it was a question of positive discrimination.



## PANEL VI. GREEN CHALLENGES FOR INDUSTRY

Chair:

**Alexander Duleba**, CEEC Director, Slovak Foreign Policy Association

Keynote:

**Ján Budaj**,  
Minister of Environment of the Slovak Republic

Speakers:

**Zdeněk Čech**, Head of the Economic Analyses Team,  
Representation of the European Commission in Slovakia

**Klaus Födinger**, Managing Director,  
Danucem Slovensko a. s.

**Milan Veselý**, Chief Executive Officer, Slovalco, a. s.

**Michal Pintér**, Director of Governmental and EU affairs,  
U. S. Steel Košice, s. r. o.

**Alexander Duleba**, CEEC Director, Slovak Foreign Policy Association, recalled that decarbonising industry is a key issue not just in the Recovery Plan, but it also has an impact on climate goals, competitiveness and employment.

**Ján Budaj**, Minister of Environment of the Slovak Republic, pointed out the current relations between the EU and Russia, in which **energy, not just gas, may become the subject of manipulation, which could have political consequences**. With regard to energy prices, attention has been focused on the Environmental Fund. It is not used to

protect the environment but to support local authorities in building infrastructure such as sewers, water mains and water treatment plants.

Industry in Slovakia is high in emissions and is energy intensive. The aim should be to gradually change technologies and add value to production. There is doubt as to whether emission allowances will rise as before, and this is where the money comes from. Although €11 million will come from the Environmental Fund, in no way will that cover industry requirements. It will therefore be **necessary to use the money from the Modernisation Fund and the Recovery Plan for decarbonisation**. At the same time, Slovakia will have the largest share of nuclear energy per capita in the world, which represents a safety risk and then there is the problem of nuclear waste disposal. Once the technologies are in place, Slovakia will begin to get rid of its nuclear energy.

The Ministry of the Environment is ready to help with the Recovery Plan, as it is an **attempt to enter the digital age and break away from the post-industrial era**. It is also an attempt at global transformation, and is not just about production but also consumption, which means big changes in human organisation, society and human priorities. Home renovations both represent an opportunity and demonstrate that it is possible to transform and the pay-back will be in energy savings. **Decarbonisation is a one-off and should be transparent, fair and lasting**. As Slovakia managed to transform after the collapse of its military



industry and its re-orientation away from the east, it can lead the change.

**Zdeněk Čech**, Head of the Economic Analyses Team, Representation of the European Commission, added that **the transformation may lead to the creation of new job opportunities, especially for companies**. Decarbonisation and emission reduction is a priority for the Commission, which is where significant Recovery Plan resources will go

as well as the new programming period. Slovakia therefore has a unique opportunity to move towards a carbon-free economy. **The time frame is demanding, so projects must be prepared now and the ministry should have a decarbonisation proposal ready this year**. In addition to public funds, the private sector must be involved in funding. Production must move towards innovation, as today's financial package will not be repeated.

**Klaus Födinger**, Managing Director, Danucem Slovensko a. s. stated that in Slovakia Danucem operates in cement processing and waste, which is processed as an alternative fuel for industry. Cement has a relatively large carbon footprint, accounting for about 3-4 percent of global emissions, because the raw material, limestone, is processed at high temperatures. Therefore, **the company uses the best possible technologies and is an industry leader in reducing emissions**. The cement plant in Turňa nad Bodvou uses green technologies, and has received environmental awards. Across Slovakia, the company has invested €13 million in new environmentally friendly technologies since 2015.

**In cement processing, emissions reductions are achieved by improving energy efficiency (by capturing waste heat), using alternative fuels from waste and by replacing raw materials – limestone – with, for example, construction waste or slag**, which also contributes to the circular economy. At the same time, they are committed to the EU's commitments and to being climate neutral by 2050. The risk in this sector is carbon leakage, where companies set up in countries where these obligations do not apply. Danucem is therefore very keen to see the carbon duty adjustment mechanism being adopted as soon as possible.

**Milan Veselý**, Chief Executive Officer, Slovalco, a. s., said that Slovakia has an energy-intensive industry and it will take quite a long time to change it. However, supporting the industry makes sense. The Commission has said that industry will be protected using carbon leakage mechanisms, such as emission allowances, or through the Environmental Fund. Slovalco produces little CO<sub>2</sub> but it does produce aluminium. It is one of the world's best but needs a large amount of energy. **The high price of electricity** is therefore a problem and one of the factors is the ETS system and the high cost of allowances. If Slovalco disappears and we push these industries out of Europe, the global carbon footprint will increase. There should therefore be compensation at the national level as well.

Slovakia should move closer to compensating at the same level as other industrialised countries and as allowed by the Commission, i.e. 25% of CO<sub>2</sub> revenues can be spent on compensation, but no more than 75% of the increased costs. **As much money as possible should go to the Envi-**

**ronment Fund – not 30% but 100% – and be used on decarbonisation and not end up being lost in the budget**. Slovalco produces special alloys for cars and other products, which are then further produced and sold in Slovakia and exported only to the EU. Aluminium is easily recycled and, because it is light, it consumes less energy.

**Michal Pintér**, Director of Governmental and EU affairs, U. S. Steel Košice, s. r. o.

said they **respect all the EU's commitments and goals and want to be part of the solution**. From the point of view of the steel industry, he stated that steel can be fully recycled without losing its technical properties and is part of the solution, and used in wind turbines, nuclear power plants, railways, oil and gas pipelines. It is important that the steel is green and European. **There is significant potential for decarbonisation, but public support is needed**, whether in the form of the Recovery Plan or Modernisation Fund.

U.S. Steel produces about a quarter of Slovakia's CO<sub>2</sub> emissions and has ambitious plans in place to ensure it and Slovakia reach the 55% target by 2030, but electricity consumption will increase and price plays a big role. **The system transfer tariff is among the highest and the regulatory system should be set differently so it is competitive**. Energy will have to be green for decarbonisation, which also relates to the taxonomy. Another aspect is having a level playing field. We have to have fair conditions if we want to invest in something. From an import perspective, the steel sector is protected. The EU plans to introduce a carbon tariff adjustment mechanism and industrial protection needs to be increased. There is also the question of whether consumers are sufficiently aware and prepared to pay for green products.

**Ján Budaj** agreed that the change from 40% to 55% by 2030 is a leap and that industry needs to be able to plan ahead. The EU therefore has to respond to international events and take action. Global mobility has gigantic costs and even things that seem cheap can be extremely expensive. We are stuck in-between, still in the fossil fuel age and leaving it is hard.



## CONCLUDING REMARKS

**Veronika Oravcová**, Executive Director of the Conference and Analyst at the Slovak Foreign Policy Association, stressed the importance of the Recovery Plans, which were produced and approved by the Commission in record time. She compared today's situation with the economic crisis ten years ago, when there was also an effort to implement green policies, but it was not nearly as successful as today, despite public support for green policies and climate policies. She welcomed the fact that the conference had discussed specific solutions for green renewal, be they at the local policy level or in energy-intensive industries. She reminded conference that although the transformation is costly, we have the tools in the EU and we should use them. She ended by thanking the speakers and moderators, partners who supported the conference, the audience following events online and all those involved.





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Conference is held under the auspices of the Prime Minister of the Slovak Republic Eduard Heger and the Mayor of Bratislava, the Capital City of the Slovak Republic, Matúš Vallo.