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Electric Power Industry of Serbia

500 MILLION EUROS ANNUALLY FOR RENEWABLE ENERGY SOURCES

CEEFOR SUSTAINABILITY STARTS ON THE ROOF

Energy Transition

HOW CAN RESIDENTIAL COMMUNITIES TAKE ADVANTAGE OF THE ENERGY TRANSITION

Nature Has the Message

International Energy and Ecology Fairs

ENERGETIKA ufi ECOAIR **14-16 October** BELGRADE FAIR

WORD OF THE EDITOR

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Dear readers,

The energy transition in Serbia has become a key issue in the last few years, especially after the significant increase in the capacity of renewable energy sources (RES). Although Serbia managed to almost double these capacities compared to 2022, it still lags behind many countries in the region.

To clarify the causes of this backlog, we spoke with Jovan Rajić, founder of the Regulatory Institute for Renewable Energy and Environment (RERI) and head of the legal team, who revealed to us the key challenges of the energy transition and the importance of the steps needed to achieve the goals.

Achieving the goals of the Integrated National Energy and Climate Plan (INEKP) should contribute to greater energy security, environmental protection, modernization of the energy sector, and improvement of citizens' quality of life. Veljko Kovačević, PhD, State Secretary in the Ministry of Mining and Energy, explains in detail what this plan brings for Serbia and how it will improve the energy sector.

Dušan Živković, general director of Elektroprivreda Srbije, talks about the realization of key projects of wind and solar power plants, their financing, the modernization of hydropower plants, the strategic project of HPP Bistrica, and new investments and projects that will shape the future of Serbian energy.

For the Energy Portal Magazine, Maja Pupovac, PhD, research associate at the Institute of Philosophy and Social Theory of the University of Belgrade and a member of the Laboratory for Active Citizenship and Democratic Innovation, wrote her opinion on how to ensure that the transition to renewable energy sources does not deepen existing inequalities but instead becomes an opportunity to create a fairer and more inclusive society.

The company Charge&GO, a leader in the development of e-mobility, significantly contributes to the expansion of the network of chargers, not only in urban areas but also on key roads, thus facilitating the transition to electric vehicles. Energy independence is becoming increasingly important for modern companies, so many owners have decided to build solar power plants to provide a stable energy source for their businesses. This issue reveals where the MT-KOMEX company implemented its latest solar power plant project. This investment not only contributes to reducing costs and increasing energy efficiency but also helps achieve sustainable development goals.

We have prepared inspiring texts and in-depth analyses that will help you better understand all aspects of the energy transition and its importance for our future.

Nevena Đukić
editor-in-chief

Photograph: courtesy of Nevena Đukić

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INECP – SERBIA ON THE PATH TO SUSTAINABILITY

The Integrated National Energy and Climate Plan (INECP) of the Republic of Serbia is a key strategic document that defines ambitious yet achievable goals for the country's energy transition. This plan is designed to guide Serbia toward a sustainable energy future, significantly increasing the share of renewable energy sources, improving energy efficiency, and reducing greenhouse gas emissions. Achieving the goals set out in the INECP should contribute to greater energy security, environmental protection, the modernization of the energy sector, and the improvement of the quality of life for citizens. Veljko Kovačević, PhD, State Secretary at the Ministry of Mining and Energy, speaks about the Integrated National Energy and Climate Plan for Energy Portal Magazine.

Q: What does the Draft Integrated National Energy and Climate Plan of the Republic of Serbia for the period up to 2030, with projections until 2050, bring?

A: The Integrated National Energy and Climate Plan is a key strategic document that defines the strategic goals and the timeline for their achievement in the energy transition process. We have set ambitious yet achievable goals whereby almost every other megawatt-hour of electricity will be green, the share of renewable energy sources (RES) in final energy consumption will reach 33.6 percent, and in electricity production, it will exceed 45 percent. Greenhouse gas emissions will be reduced by 40.3 percent compared to 1990, and the integration of the electricity market with the EU's single market will be completed. One of the most important messages that INECP sends to the public is that we have conducted a detailed analysis of the baseline electricity production diagram and that all projections defined through the Stability and Stability-Progress scenarios have been made to ensure that the Republic of Serbia always has enough base energy, which is the only guarantee of the country's energy security. Additionally, we will improve energy efficiency through building renovations and implementing policies in industry and transport, encourage electromobility, and increase the use of renewable energy sources in heating, cooling, and electricity production, as well as advanced biofuels.

Q: Energy efficiency is a special segment of the INECP. What is planned in this regard, and what national goals have been set accordingly?

A: In Serbia, three and a half times more energy is consumed in producing the same unit of GDP compared to the European average, which is why the Government and the relevant ministry have defined energy efficiency as one of the priorities within the INECP and the "Leap into the Future – Serbia 2027" plan. The INECP defines a limitation on final energy consumption to a level not exceeding 9.7 Mtoe by 2030. The same trend is observed in primary energy consumption, which is expected to be less than 14.68 Mtoe by 2030. The state is currently investing unpre-

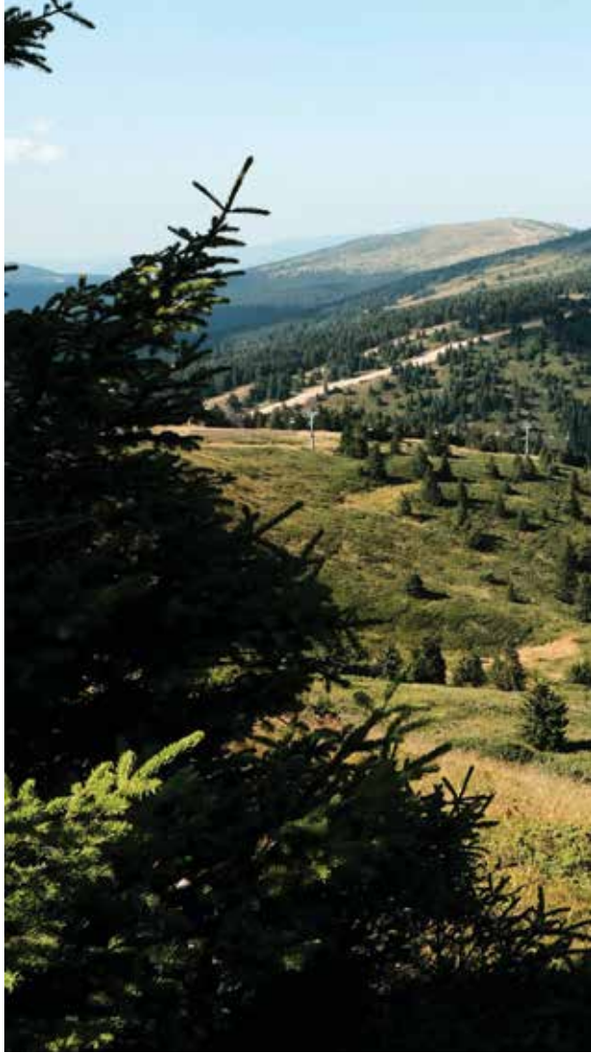
Photograph: Unsplash/Goxy Bgd

By adopting the Integrated National Energy and Climate Plan, Serbia has gained a strategic document aligned with Europe's vision of decarbonizing the energy sector, thus representing Serbia's "roadmap" for energy transition

cedented funds to improve energy efficiency. In the past three years, more than 30,000 households received state subsidies for implementing energy efficiency measures. By the end of 2027, we will support over 70,000 households in replacing windows, improving insulation and facades, replacing inefficient boilers, and installing solar collectors or panels for generating electricity for personal use. In cooperation with the World Bank, we secured $50 million for household subsidies, which can cover up to 65 percent of the value of energy renovation measures, while socially vulnerable groups receive grants covering 90 percent of the costs.

VELJKO KOVAČEVIĆ, PhD, graduated from the Faculty of Law at the University of Belgrade. He completed his specialist and doctoral studies in transport insurance, maritime law, and inland navigation law at the Faculty of Law at Union University. He has published several scientific articles on maritime law and analyses of certain legal institutes of the Anglo-American legal system. He completed executive senior training in public-private partnerships and project financing at the Harvard Kennedy School. From 2008 to 2022, he worked at the Ministry of Construction, Transport, and Infrastructure, serving as Assistant Minister from 2016 to 2022. Kovačević, PhD, has been working at the Ministry of Mining and Energy since November 2022, and in September 2023, he was appointed State Secretary.

Photographs: (middle) Pixabay/Falco; (bottom) Pixabay/Rade Dr.; (Kovačević) courtesy of Veljko Kovačević



In addition to household energy renovation, we are implementing the Public ESCO Project in collaboration with the European Bank for Reconstruction and Development (EBRD), valued at 64.5 million euros, which focuses on the energy renovation of residential buildings connected to district heating systems and the transition to consumption-based billing in 14 cities and municipalities. It is estimated that more than 500 residential buildings, covering an area of about one million square meters, will be renovated as part of the project. Grants will cover the costs of preparing energy efficiency reports and relevant studies, as well as 50 percent of the investment value, while citizens will repay their share of the investment through their heating bills.

The Ministry of Mining and Energy is investing significant funds in improving energy efficiency in public buildings across Serbia. This year, we allocated 800 million dinars in the budget for these purposes, twice as much as in 2023. We signed contracts with 41 local government units to conduct energy renovations of kindergartens and preschool institutions, elementary and high schools, faculties, libraries, cultural centers, healthcare institutions, and municipal administration buildings. By completing the energy renovations, we will save about 9,000 MWh of thermal and electric energy annually while reducing carbon dioxide emissions, which will amount to about 5,500 tons per year. In renovated buildings, energy consumption will decrease by 20 percent to 50 percent.

We are also paying great attention to the energy renovation of central government buildings. We have secured funds for the energy renovation of 26 out of 56 buildings, including the Palace of Serbia, and these works should be completed by 2027, when the specialized EXPO exhibition will be held.

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Q: What does INECP bring when it comes to renewable energy sources?

A: With the adoption of the Integrated National Energy and Climate Plan, Serbia has gained a strategic document aligned with Europe's vision of decarbonizing the energy sector, thus representing Serbia's "roadmap" for energy transition. This plan is tailored to the characteristics of our energy sector and the imperative that, at all times, our citizens and economy can rely on a secure supply.

The Integrated Plan emphasizes investments in renewable energy sources. About 3.5 gigawatts of new solar and wind power plants are expected to be connected to the grid by 2030, meaning that almost every other megawatt-hour of electricity produced will be sourced from clean energy.

Photographs: (bottom) Wikipedia; (top) Unsplash/Neon Joi

The Integrated National Energy and Climate Plan (INECP) of the Republic of Serbia is a key strategic document that defines ambitious yet achievable goals for the country's energy transition

Q: The document considers a scenario that envisions including nuclear energy in the energy mix. What does this bring, and when could the first nuclear power plant be operational?

A: I believe that one of the most important achievements we have made through the INECP is the introduction of a scenario that considers nuclear energy, thereby beginning to correct the mistake made in the late 1980s when a moratorium on the construction of nuclear power plants was introduced. I've always found it interesting that this decision was made during the time of the former Yugoslavia, implemented by the leadership of the then SR Serbia, while Slovenia and Croatia had already completed the construction of the Krško nuclear power plant. As a result, we are the generation that must correct this mistake for a safer future for our children.

In this context, the Integrated National Energy and Climate Plan considers incorporating nuclear power plants with a total capacity of up to 1,000 MW into Serbia's electricity system after 2040 through a variation of one of the scenarios. In the upcoming period, the Ministry of Mining and Energy will, within the first two phases of developing the nuclear program, carry out the necessary analyses and studies as required by the International Atomic Energy Agency. These studies aim to thoroughly assess the current situation regarding educational staff, existing and planned energy and other infrastructure, the legislative framework, currently available technologies, and those expected to be applicable in the medium term (such as the fourth generation of nuclear reactors), and to select the one that best meets the needs of Serbia's energy system. Additionally, all other necessary factors will be analyzed to proceed to the next nuclear program development stages. If the analyses show that constructing a nuclear power plant is the optimal solution for ensuring a sustainable base energy supply, we will develop a Nuclear Energy Development Strategy, enact a Nuclear Energy Law, and then proceed with the project to build a nuclear power plant. However, reality shows us an increasing demand for electricity every day and the necessity of having enough base energy, leading to the inevitable conclusion that nuclear power plants will be needed in the future. The issue of energy supply is a matter of both energy and national security, so it is crucial to approach this topic professionally and with dedication.

Recently, a Memorandum of Understanding on the development of nuclear energy in the Republic of Serbia was signed with the professional and scientific community, initiating a public debate covering safety, legal, organizational, scientific research, engineering, and all other aspects of nuclear technology. We have gathered experts from the academic community, universities, and state institutions to establish a framework for institutional cooperation and involve all the experts who can help us catch up with countries that have not had the 35-year moratorium on nuclear energy that we have.

Q: What do we gain by achieving all the set goals?

A: The adoption of the INECP marks the beginning of a new phase in the development of Serbia's energy sector, which should contribute to greater supply security, increased participation of clean energy sources, and enhanced environmental protection. Achieving the goals outlined in the INECP is expected to bring multiple benefits to our citizens and economy, including an increase in GDP, new opportunities for Serbian companies, new jobs, a secure and accessible energy supply for consumers, more green energy, and the modernization of the energy sector in line with European standards.

Interview by Milica Radičević

Photographs: (middle) Pixabay; (bottom) Pixabay/Pisoi2002

CHALLENGES OF COMPETITIVE ENERGY PRODUCTION IN THE GLOBAL MARKET

Forming a unified European energy market is crucial for the Energy Community (EC), which includes European Union members and nine other signatory countries. Although significant progress has been made over the past two years, there are still considerable obstacles. The slow transposition of the Electricity Market Integration Package is causing chain reactions that could jeopardize the Carbon Border Adjustment Mechanism (CBAM). Artur Lorkowski, Director of the Energy Community Secretariat, spoke to Energy Portal Magazine about the challenges of electricity market integration, the importance of transitioning to clean energy sources, meeting Green Agenda goals, and the recent major power outage that affected Montenegro, Bosnia and Herzegovina, parts of Croatia, and Albania.

Q: How integrated are the Western Balkan countries into the common electricity market? What is the biggest obstacle to better and faster integration?

A: Since December 2022, significant progress has been made in integrating the Western Balkans' electricity market into the EU internal market. The adoption of the Electricity Market Integration Package by the Energy Community is a significant step

Photograph: Unsplash/Dina Lydia

Significant progress has been made in the Western Balkans. Still, to enable market coupling, the contracting parties must accelerate the transposition and implementation of the Electricity Market Integration Package and resolve political disputes

Artur Lorkowski
Director of the Energy Community Secretariat

toward full integration, enabling participation in the Single Day-Ahead and Single Intraday Coupling (SDAC, SIDC) and integration into European balancing platforms.

New day-ahead markets have been established in Albania, Montenegro, North Macedonia, and *Kosovo, alongside the existing market in Serbia, which has also launched an intraday market. These initiatives enhance short-term trading and provide transparent price signals. At the beginning of 2024, the price range between Western Balkan exchanges and HUPX averaged 0.28 to 3 EUR/MWh, indicating strong market integration with the EU. Market coupling is expected to increase efficiency and competition further.

However, some challenges need to be addressed. The slow transposition of the Electricity Market Integration Package is a significant obstacle. None of the Western Balkan contracting parties have completed this process despite the deadline being the end of 2023. This affects the Capacity Calculation Region (CCR), which is crucial for market coupling. Delays could postpone market coupling with the EU until 2026, jeopardizing exemptions from the Carbon Border Adjustment

* This designation is without prejudice to positions on status and is in line with the United Nations Security Council Resolution 1244 and the opinion of the International Court of Justice on Kosovo's declaration of independence.

Photograph: (bottom) Unsplash/Dominik Vanyi; (Lorkowski) courtesy of Artur Lorkowski

Mechanism, which will be in effect from the start of CBAM implementation on January 1, 2026. Securing CBAM exemptions is critical for contracting parties with carbon-intensive electricity production that are electricity exporters. Without this exemption, CBAM implementation is likely to reduce the competitiveness of their electricity, leading to decreased revenues and profits for electricity producers and lower tax revenues for national budgets.

Significant progress has been made in the Western Balkans. Still, to enable market coupling, the contracting parties must accelerate the transposition and implementation of the Electricity Market Integration Package and resolve political disputes. This will allow the Western Balkans to apply for CBAM exemptions in the electricity sector, improving economic competitiveness and strengthening their integration with the EU.

Q: What are the main problems in electricity production and consumption in the Western Balkan countries, especially Serbia?

A: Serbia, like the rest of the Western Balkans, currently meets its electricity needs and exports surplus, but it faces key challenges in the future. Favorable hydrological and market conditions led to historic net exports in 2023, which continued into early 2024. However, the main challenge lies in producing electricity competitively in the future to finance investments in renewable energy sources needed to meet the 2030 targets. As such, the key issues are the need for a transition to more competitive, clean energy sources to ensure future profitability and investments in renewables while also dealing with outdated coal-fired power plants that are expensive to modernize and will be economically unsustainable under future carbon pricing conditions. A well-planned transition to sustainable energy is essential to ensure long-term electricity production and meet the 2030 targets.

To meet the 2030 goals and ensure future profitability, Serbia must address the issue of outdated coal-fired power plants and invest in renewable energy sources. A well-planned transition to sustainable energy, guided by the new National Energy and Climate Plan, is crucial for long-term success.

Q: How will the introduction of CBAM affect the Western Balkan countries?

Photograph: (bottom) Unsplash/Rodion Kutsaiev; (top) Unsplash/Arno Senoner

The stability of the Western Balkan energy system is of crucial importance

Is it possible to delay the implementation of CBAM, and under what conditions would that be possible?

A: The CBAM regulation is now in effect and could significantly impact the Western Balkan countries due to their higher carbon intensity in exports compared to EU averages. To potentially secure an exemption from CBAM for electricity until 2030, the region must first integrate its electricity markets with the EU and commit to establishing an emissions trading system equivalent to the EU ETS by 2030. This exemption would provide crucial relief. The Energy Community Secretariat is available to support the contracting parties in meeting these criteria and navigating the necessary steps. The European Commission will further clarify options through impact assessments and political discussions at the Energy Community Ministerial Council in December 2024.

At an informal ministerial council in Banja Luka earlier this year, the Secretariat and the European Commission advised the Western Balkan countries to consider developing an emissions trading system in line with the EU. This would ensure the best chance for CBAM exemptions in the electricity sector and economic relief.

Q: Europe plans to become a carbon-neutral continent by 2050. Do the Energy Community Treaty signatories have a deadline for a complete transition from coal to other energy sources?

A: According to the 2021 Decarbonization Roadmap, the Western Balkans have committed to achieving climate neutrality by 2050, which includes gradually phasing out coal and reducing subsidies for fossil fuels. Although the Energy Community framework does not set specific deadlines for this transition, each contracting party must address coal phase-out in accordance with its economic, environmental, and legal context. Key factors include aligning with air quality standards, meeting climate goals by 2030, integrating with the EU electricity market, establishing carbon pricing, and preparing for EU accession. The Energy Community Secretariat will assess the National Energy and Climate Plans (NECP) to ensure they meet these goals.

Q: How are the signatories of the Energy Community Treaty progressing in meeting the Green Agenda goals? What are the most important projects that need to be implemented to meet these goals?

A: The signatories of the Energy Community Treaty are making progress toward the Green Agenda, guided by the European Green Deal. Significant legal obligations have been fulfilled on the path to decarbonization, including the 2030 targets, but progress is uneven. Key challenges include the slow implementation of key regulations such as REDII and EED, the lack of carbon pricing mechanisms, and the presence of fossil fuel subsidies. Countries must effectively implement their National Energy and Climate Plans (NECP) and promote renewable energy through Guarantees of Origin and Power Purchase Agreements (PPA) to advance.

Q: In June, power outages occurred in Montenegro, Bosnia and Herzegovina, parts of Croatia, and Albania. How much of a priority is achieving stability in the Western Balkan energy system, and how can it be achieved?

A: The stability of the Western Balkan energy system is crucial. Despite the outages in June 2024, the grid maintains a high-reliability level, with the annual shortfall of delivered electricity being minimal compared to overall consumption. The outages were caused by simultaneous failures in lines and maintenance, with further causes under investigation by ENTSO-E. Strengthening cooperation among transmission system operators (TSOs) through system operational and capacity calculation regions, as outlined in the Electricity Market Integration Package (EIP), would help prevent such incidents. This can be achieved by completing the long-delayed transposition of the EIP.

Additionally, the completion of key transmission projects, such as the 400 kV lines in Montenegro, Albania, North Macedonia, and Serbia—OHL 400 kV Lastva – Pljevlja in Montenegro, OHL 400 kV Elbasan (Albania) – Bitola (North Macedonia), and the Trans-Balkan Corridor: OHL 2x400 kV Obrenovac – Bajina Bašta in Serbia, and OHL 2x400 kV Bajina Bašta (Serbia) – Višegrad (Bosnia and Herzegovina) / Pljevlja (Montenegro)—is essential. Meanwhile, voluntary agreements for remedial measures can improve grid stability.

Interview by Jasna Dragojević

SUSTAINABILITY AND DEVELOPMENT FOR A BETTER QUALITY OF LIFE

Cities, as major centers of population growth and dynamic urban development, often stand out as particularly vulnerable areas to the impacts of climate change. In this regard, Podgorica, the capital where nearly a third of Montenegro's population resides and which, during the workweek, is visited by tens of thousands of people due to daily migrations, is no exception. Climate parameter analyses conducted so far indicate that the shift towards a warmer climate began in 1990, with each subsequent decade warmer than the previous one.

"Recorded weather and climate extremes include, among other things, more frequent and longer heat waves from May to September, a longer vegetation period, more frequent droughts accompanied by high temperatures and forest fires, and an increased number of days with very heavy rainfall. As for projected climate changes, further increases in the overall length and number of tropical waves, a rise in the number of consecutive days without precipitation, and a slight decrease in the average annual maximum wind speeds are expected. An adequate response to the impacts of climate change, or the preservation of the environment as a whole, can only be ensured through a multidisciplinary approach and collaboration at all levels, from local to international. Considering the most prominent challenges faced by Podgorica as a rapidly developing city, it is imperative to preserve space while ensuring the infrastructure necessary for a quality life," says Professor Olivera Injac, PhD, the Mayor of Podgorica.

According to her, the priorities of the city administration include improving public transportation, preserving public green spaces through

Photographs: Municipality of Podgorica

In the upcoming period, we will intensify activities towards installing solar panels on buildings owned and used by the city, and there are already activities implemented by the city enterprise Zelenilo, with the goal for renewable energy sources to take precedence in all work processes

PROFESSOR OLIVERA INJAC, PhD, completed her undergraduate studies at the Faculty of Philosophy, University of Montenegro in Nikšić and continued her postgraduate studies at the Center for International Cooperation. She earned her master's degree at the Faculty of Political Sciences, University of Montenegro. In October 2011, she defended her doctoral dissertation at the Faculty of Political Sciences, University of Montenegro.

continuous maintenance of existing ones and the creation of new ones, establishing protected natural areas, continuously improving waste management systems, constructing a new wastewater treatment plant, and expanding and improving the water supply system. All city services and enterprises actively address these priorities through continuous cooperation, with a high degree of transparency, by encouraging citizen participation and engagement with the non-governmental sector to define the highest quality decisions that are important for society as a whole.

Q: What measures are you taking to reduce air pollution?

A: The results of air quality monitoring conducted in Podgorica at both the state and local levels indicate that the air in our city is still relatively well-preserved, with the average annual concentration of PM10 and PM2.5 particles below the threshold limit, which further obligates us to maintain and improve the quality of this segment. According to data obtained through monitoring, all exceedances of these parameters, except in emergencies predominantly caused by fires during the summer period, occur during the heating season, which presents a particular challenge for local governments. The main recommendations for improving air quality in monitoring reports relate to improving public transportation, promoting and encouraging alternative modes of transport, expanding urban green areas, and enhancing energy efficiency. The city has a significant number of roundabouts, which reduces traffic congestion and thus decreases pressure on air quality.

Photograph: (Injac) courtesy of Olivera Injac

As a city that ranks as the fifth greenest city in Europe in the urban green infrastructure category, we are continuously working to make the city even greener

We are also working on establishing cycling infrastructure. In this context, a significant project is "Podgorica on Two Wheels," which subsidizes the purchase of bicycles and electric scooters, a project that has garnered considerable interest. Podgorica is characterized by the expansion of urban green areas, with over 300,000 m² of new and revitalized spaces in the past few years. For more efficient planning and management, the Green Space Cadastre of Podgorica was completed at the end of 2022, spanning about 1,200 hectares of public green spaces. The cadastre was developed as an intuitive, user-friendly application containing data on trees, shrubs, recreational areas, and urban furniture, searchable by various criteria. Recently, we have also begun developing the concept of green roofs, which is a particularly significant mechanism in this context in urban areas, and we are conducting activities to reforest the hills surrounding Podgorica.

Q: How much are you investing in the development of city parks and botanical gardens, and what are the plans for implementing the so-called green belt around the city?

A: "Green Podgorica" is a vision to which we are fully committed, and the efforts we put into this area have already yielded visible results. As a city that ranks as the fifth greenest city in Europe in the urban green infrastructure category, we are continuously working to make the city greener.

In the past year, Podgorica has gained more than 35,000 m² of new parks, over 30,000 m² of landscaped areas, nearly 20,000 m² of developed urban pockets, and almost 100,000 m² of new green spaces, which makes us very proud. In addition, the Micro 020 project, implemented by the Office of the Chief

INTERNATIONAL COOPERATION

Podgorica is a member of the EU Mission for 100 Climate-Neutral and Smart Cities by 2030 and the international initiative Making Cities Resilient 2030, within which, in collaboration with regional and international partners, solutions are being defined to make cities more prepared for global challenges. For the first time, Podgorica is participating in an international project under the auspices of the Horizon Europe program as the only local government in a consortium of 24 partners. The project aims to improve energy efficiency in public buildings by developing and implementing innovative solutions in this area.

City Architect, focuses on revitalizing neglected and forgotten urban pockets, that is, smaller areas in the city that are in poor condition. Within this project, we will soon have about ten ready project solutions based on which we will develop an equal number of public spaces throughout the city.

Since the beginning of the year, we have arranged numerous park areas in several neighborhoods in Podgorica.

Additionally, several smaller green spaces have been constructed and reconstructed, and tree rows have been planted where technically feasible. The reconstruction of

Karađorđev Park in the city center and the construction of a large park in the Zabjelo neighborhood will soon begin.

The creation of the so-called green belt around Podgorica, with the planting of tens of thousands of new seedlings, further strengthens efforts to create a sustainable urban environment. This project will continue into the fall, with another planting season set to begin. Along with the formation of linear greenery and the development of smaller green areas, the goal is to connect suburban and urban areas into a unified system of city greenery.

There are also plans to develop Lješkopoljska Gorica Hill, which will be an essential part of the city's green infrastructure. It will serve as another foundation for adapting to climate change by establishing ecological stability and improving residents' quality of life.

Q: How have you regulated proper waste disposal, and how have you improved waste management?

A: At the end of 2006, following the decision of the City Assembly, the Podgorica government formed the Deponija Company, which began operations in 2007. Its primary role was the disposal of municipal waste from the territory of Podgorica, Cetinje, and Danilovgrad municipalities, as well as the urban municipalities of Tuzi and Zeta, now independent municipalities. The urban planning envisaged six sanitary landfills. All were constructed following Directive 1999/31/EC on the landfill of waste (later amended by Directive (EU) 2018/850). Subsequently, operations were defined by the Law on Waste Management and the Regulation on the Specific Characteristics of Locations, Construction Conditions, Sanitary-Technical Conditions, Operation, and Closure of Landfills. In mid-2010, the Regional Recycling Center for Municipal Waste and the Recycling Center for Waste Vehicles were put into operation.

Regarding the increase in the share of renewable energy sources, Deponija's role is reflected in initiating a cogeneration project, i.e., generating electricity and heat from the combustion of landfill gas. A public call is currently open for the development of a feasibility study that will provide answers on the profitability of this project. Given that three sanitary landfills have been filled and closed, and the fourth one is active with space remaining for landfills 5 and 6, there is optimism that this study may yield very encouraging results, allowing the construction of the cogeneration plant to begin next year.

Q: What have you been doing to increase the share of renewable energy

sources, and how much is being done on constructing solar power plants, considering the large number of sunny days and the geographical location?

A: In accordance with the relevant legal framework, the Podgorica government makes decisions on the installation, construction, and removal of local facilities of general interest within the city's territory, which, among other things, define the optimal conditions for the construction of solar power plants up to 5 MW. There is significant interest in building solar power plants. We certainly pay attention to site selection, aiming to preserve space as a precious resource while also considering other potential environmental impacts, which, aside from the positive aspects, should not be neglected, such as impacts on biodiversity and the generation of significant amounts of waste in the future, after the power plants' operational life ends. According to the city's decision on calculating the fee for utility equipping of construction land, it is possible to achieve a reduction in the cost for installed solar collectors for building needs up to 100 euros per m^2 of collectors, up to a maximum of 50 percent of the calculated fee, which represents the maximum amount

rrent situation and valuable guidelines for further optimization. This is also the first step toward implementing the most modern adaptive traffic signal control system.

Currently, Podgorica has 48 signalized intersections, of which about 30 are substantially congested. The modern system will also allow us to measure traffic at each intersection,

Regarding the increase in the share of renewable energy sources, Deponija's role is reflected in initiating a cogeneration project, i.e., generating electricity and heat from the combustion of landfill gas

defined by law under which the decision was made.

We will intensify activities to install solar panels on city-owned and used buildings in the upcoming period. The city enterprise Zelenilo has already implemented these activities, with the goal of prioritizing renewable energy sources in all work processes.

Q: What is the plan for developing smart traffic management systems? How do you plan to develop electric car and bicycle infrastructure?

A: We are continuously working on solving traffic congestion caused by multiple factors, focusing on modern solutions that could completely transform how traffic is managed in the capital city. In addition to strengthening public transport capacities and providing quality conditions for using city buses, colleagues from the Traffic Secretariat, the Information System Service, and the city company Public Utilities are conducting activities related to monitoring traffic flows several times during the day. Through detailed analysis using advanced software tools, we will obtain an accurate picture of the current situation and valuable guidelines for further optimization. This is also the first step toward implementing the most modern adaptive traffic signal control system.

Currently, Podgorica has 48 signalized intersections, of which about 30 are substantially congested. The modern system will also allow us to measure traffic at each intersection, and the data obtained could be beneficial for developing strategies and planning the city's further development.

Furthermore, we plan to acquire electric vehicles that will gradually replace the existing vehicles in our fleet. We are launching public tenders to procure additional charging stations to make them as accessible as possible to the citizens of Podgorica and our employees.

As for bicycle lanes, a comprehensive study is underway that will provide us with significant guidelines for creating new corridors, especially considering that the solutions we inherited were problematic in several ways. We have taken action in the most acceptable direction to everyone and worked on improving traffic culture. We value the knowledge of all those who wish to contribute to the city's development because we share a common goal – a functional and pleasant life in Podgorica.

Interview by Mirjana Vujadinović Tomevski

LEGISLATIVE FRAMEWORK OF THE EU AND SERBIA FOR THE ENERGY TRANSITION

The energy transition is a global process involving almost every country in the world. The goal is to build a sustainable and secure energy system that can meet the growing demand for energy while reducing the negative impact on the environment. Although each country tailors its approach according to its own capabilities, Europe has set an even more comprehensive and ambitious goal—to become the first climate-neutral continent in the world. Clean energy is the central thread in achieving this transition, as energy accounts for about 75 percent of total greenhouse gas emissions in the European Union.

The transformation of the energy sector has led to the development of important policies that regulate various areas, from transitioning from fossil fuels to low-carbon and renewable energy, improving energy efficiency in industry and buildings, product energy labeling, electromobility, to the introduction of smart meters, integration, and digitalization of the energy market.

The European Green Deal, the Fit for 55 package, and the REPowerEU Plan are among the most important

Photograph: Unsplash/Etienne Girardet

European Union policies in the field of energy and climate transition.

The European Green Deal

In 2019, the European Commission adopted a long-term vision called the European Green Deal, which aimed at achieving climate neutrality by 2050. It laid the foundation for all subsequent policies and legislative initiatives related to sustainable energy development and the reduction of greenhouse gas emissions. As part of the European Green Deal, the first European Climate Law was adopted in 2021, setting the goal for the European economy and society to become climate-neutral by 2050, along with an intermediate goal of reducing net greenhouse gas emissions by at least 55 percent by 2030 compared to 1990 levels. The goal of net-zero greenhouse gas emissions by 2050 became legally binding with this law. It stipulates that EU institutions and member states have the duty to take the necessary measures at both the Union and national levels to meet this goal.

It is particularly emphasized that it is necessary to consider the importance of promoting fairness and solidarity among member states. The European Climate Law also includes measures for monitoring progress and adjusting actions accordingly based on certain existing systems. For example, the Regulation on the Governance of the Energy Union is cited. It is intended to help the European Union achieve its climate and energy goals by setting common rules for planning, reporting, and monitoring. It aims to ensure that planning and reporting are aligned with the goals and cycles of ambition defined in the Paris Agreement. Another example is the so-called NECP, which represents the ten-year national energy and climate plans of EU countries. Within these plans, member states outline how they will address decarbonization, energy efficiency, energy security, the internal energy market, research, innovation, and competitiveness issues. In February 2024, the European Commission recommended that an additional intermediate goal of a 90 percent reduction in emissions by 2040 be included in the European Climate Law. However, the legislative proposal for this recommendation is still pending.

It should be noted that the European Green Deal places people at the heart of the transition, striving to make the transition fair, particularly paying attention to those vulnerable in the clean transition and most affected by the consequences of climate change. This includes significant investments through funds and other financial instruments. For example, the Just Transition Fund supports workers and regions in developing new skills and advancing the green economy. The Social Climate Fund is intended to support vulnerable groups in investments in energy efficiency or energy renovation of buildings, clean heating, renewable energy integration, and more.

The Fit for 55 Package

While the European Green Deal is the European Union's long-term vision to achieve climate neutrality by 2050, the Fit for 55 Package represents concrete legislative proposals to make that vision a reality. This package was introduced in 2021, and its name refers to its main goal: reducing net greenhouse gas emissions by 55 percent by 2030, compared to 1990 levels. It includes revisions to several significant directives related to achieving the European Union's climate goals. These directives include the Renewable Energy Directive (RED), the Energy Efficiency Directive (EED), the Energy Performance of Buildings Directive (EPBD), the Energy Taxation Directive, and the Gas and Hydrogen Package. The revisions aim to align the existing le-

Although each country tailors its approach according to its own capabilities, Europe has set an even more comprehensive and ambitious goal—to become the first climate-neutral continent in the world

Photograph: Pixabay/Simon

gal frameworks with the goals set by the Fit for 55 Package.

The Fit for 55 Package encompasses numerous areas that need improvement. This package makes the EU Emissions Trading System (EU ETS) more ambitious in several ways, one of which is its expansion to include emissions from maritime transport.

Numerous additional targets are established to achieve the main goal set by the Fit for 55 Package. The first target mentioned is the transition from fossil fuels to low-carbon and renewable energy sources. The next goal is to reform the EU Emissions Trading System, which involves introducing stricter rules and expanding them to additional sectors. These goals also include reducing emissions in transport, buildings, agriculture, and waste, as well as in land use and forestry sectors. Speaking of specific emissions, particular attention is directed towards reducing methane emissions. Other goals include establishing funds to provide financial support during the transition to a green economy.

REPowerEU

Shortly after the war in Ukraine started, which led to disruptions in the global energy system and a rise in the prices of energy sources such as gas, oil, and coal, the European Union adopted the REPowerEU plan in May 2022. This plan aims to reduce the European Union's dependence on Russian fossil fuels by accelerating the transition to clean energy. In addition to reducing the EU's dependence, the plan includes reducing greenhouse gas emissions by 55 percent by 2030 and achieving climate neutrality by 2050. To achieve these goals, REPowerEU includes measures for faster issuance of renewable energy project permits, diversifying energy sources, reducing fossil fuel consumption, significant investments in the power grid and hydrogen infrastructure, and ensuring that member states jointly organize the procurement of gas, LNG, and hydrogen at the EU level.

Serbia's Energy Transition

Serbia has made significant progress in its energy transition in the past two years. However, improvements in the legislative framework are necessary to accelerate this process further. In August of this year, the Ministry of Mining and Energy initiated a Public Debate on the Draft Law on Amendments to the Energy Law. The key changes include the elimination of net metering and net billing, regulating the balancing market, enabling end consumers to become active participants with variable price contracts, and considering repealing the Law on the Prohibition of Nuclear Power Plants in the former SFR Yugoslavia.

In August of this year, the Public Debate on the Draft Energy Development Strategy of the Republic of Serbia until 2040, with projections until 2050, was also completed. According to the document, the Strategy outlines the path for reforming the energy sector and implementing the energy transition process. Key elements highlighted include the transition to renewable energy sources (RES), intensified application of energy efficiency measures, and improvements in all energy sectors, economic branches, and consumption sectors. Additionally, the possibility of introducing nuclear energy into the energy sector of the Republic of Serbia after 2040 is being considered. The Strategy also proposes the introduction of greenhouse gas emission charges to discourage the

Photograph: Pixabay/Vale Photography

use of fossil fuels and inefficient energy technologies. Furthermore, it aims to secure part of the incentive funds for improving energy efficiency, building capacities for using renewable energy sources and providing financial assistance to local communities in coal regions to overcome the socio-economic impacts of the energy transition and ensure a just transition.

The Integrated National Energy and Climate Plan of the Republic of Serbia for the period from 2030, with projections until 2050 (INECP), is a strategic document that outlines particular policies and measures to achieve the goals of renewable energy sources, energy efficiency, and greenhouse gas emission reduction. The most important goals set by INEKP include increasing the share of renewable energy sources and electricity production to 45 percent, significantly enhancing energy efficiency, and reducing greenhouse gas emissions by 40.3 percent by 2030 compared to 1990 levels. Serbia took on the obligation to develop INECP by signing the Energy Community Treaty and the Sofia Declaration on the Green Agenda for the Western Balkans.

In February 2024, the European Commission recommended that an additional intermediate goal of a 90 percent reduction in emissions by 2040 be included in the European Climate Law, but the legislative proposal for this recommendation is still pending

Serbia has signed several international agreements that obligate it to undertake concrete measures and improve actions at the national level. These include adapting the legislative framework and implementing policies aimed at climate neutrality, decarbonization, and energy transition.

Prepared by Katarina Vuinac

Photograph: Unsplash/Zoya Loonohod

500 MILLION EUROS ANNUALLY FOR RENEWABLE ENERGY SOURCES

The main goals of the projects that entail the construction of solar and wind power plants are energy supply security and increasing the share of renewable energy sources in our energy portfolio. The Electric Power Industry of Serbia (EPS) plans to revitalize all hydropower plants, and it is determined that by 2030, 45 percent of electricity generated by Serbia's energy sector will come from renewable sources. Dušan Živković, the General Director of EPS, spoke to Energy Portal Magazine about the implementation of the most significant wind and solar power projects, their financing, the modernization of hydropower plants, the strategically important Bistrica project, as well as new investments and projects.

Q: What are the priority projects for wind and solar power plants? How far along is the implementation of these projects? What are the deadlines for their construction, and when are the facilities expected to be connected to the power grid?

A: The main goals of the projects that entail building solar and wind power plants are energy supply security and increasing the share of renewable energy sources (RES) in our energy portfolio. We are doing this by using the land available to EPS, such as ash and waste disposal sites, to produce electricity in a sustainable and environmentally friendly way. The implementation of these projects and the utilization of remaining hydro potential will contribute to the decarbonization of the power sector and increase the share of RES in EPS' energy production mix. The most significant RES project is the Kostolac wind farm, which has a capacity of 66 megawatts and is expected to be completed by early 2025. The Petka solar power plant, with a capacity of nearly 10 megawatts, is also expected to be completed by the year-end. Several solar power plants are in the design phase, and they will be built on land owned by EPS or on the land that we have usage rights to. After initial analyses, the drafting of project documentation for the Klenovnik solar power plant continues. Several other projects are in various stages of design or initial analysis, including the Kolubara B, TENT A Ash Dump, TENT B Cassette 3, TENT B – Ash Dump, PK Tamnava East, PK Tamnava West, and Middle Kostolac Island solar power plants.

Photographs: EPS

By 2030, the planned investments in hydropower plants and renewable energy sources will amount to 3.6 billion euros or more than 500 million euros annually. Total investments during this period are estimated at around 7 billion euros

DUŠAN ŽIVKOVIĆ, the Director General of the Electric Power Industry of Serbia AD, graduated from the Faculty of Electrical Engineering in Belgrade and has over 30 years of experience in investment, financing, engineering, energy systems design, management systems, and their implementation at EPS. For two decades, he has led investment operations, renewable energy sources, and the development of production capacities at EPS. He has also managed the renewable energy sector in the power grid. Mr Živković has actively participated in the preparation of long-term investment and development plans and worked on projects involving the revitalization of equipment in mines, thermal power plants, hydropower plants, transmission and power distribution grids, as well as environmental protection projects, renewable energy development, and energy efficiency.

GREEN KILOWATTS

In 2023, hydropower plants generated 12,659 gigawatt-hours of electricity. This is the highest annual production since 2001 and 13 percent higher than planned. Compared to 2022, hydropower production increased by 41 percent.

These solar power plants will be built in locations where EPS already has production facilities, such as power plants and mines, and partially developed infrastructure for future solar power plants, which is why we have a comparative advantage over other investors.

Regarding solar power plants, we should not forget the largest project currently being developed in Serbia. As per the government's public call for the selection of a strategic partner to build 1 GW solar power plants with a battery storage capacity of at least 200 MW (400 MWh), EPS will manage them once they are finished.

The Kolubara A and Morava solar power plants are expected to be connected to the power grid by 2028, along with the solar power plants that will be built by the strategic partner, which are scheduled for 2028. The Kolubara B and Klenovnik solar power plants are expected to be completed and operational by 2030.

Q: How are the wind farm and solar power plant projects financed? What amounts are allocated for investments?

A: The value of the Kostolac wind farm project is 144 million euros. The European Union provides 31 million euros in grants, EPS allocates 32.2 million euros, while the KfW loan is 80 million euros, and the grant from that bank is 1.8 million euros. The planned investment for the Petka solar power plant is 1.36 billion dinars and is financed by EPS funds.

Following the 28th call for the provision of technical assistance under the EU Western Balkan Investment Framework (WBIF) program and seven calls for co-financing investment projects through WBIF, EPS was awarded a total of 49.02 million euros in non-refundable

development assistance for four projects: the revitalization of the Vlasinske hydropower plants (16.1 million euros), the construction of the Kostolac wind farm (31.2 million euros), and the drafting of technical documentation for the development of the Morava and Kolubara A solar power plant projects (860,000 euros each).

In terms of the Morava and Kolubara A solar power plants, the prerequisite for applying was to have an interest in or an already signed credit arrangement with one of the banks from the WBIF program (EBRD, KfW, EIB, World Bank, AFD, CEB).

Q: EPS is shifting towards renewable energy sources and working on further modernization and construction of hydropower plants. What are the most significant projects planned? What is the importance of revitalizing these projects, and how are they financed?

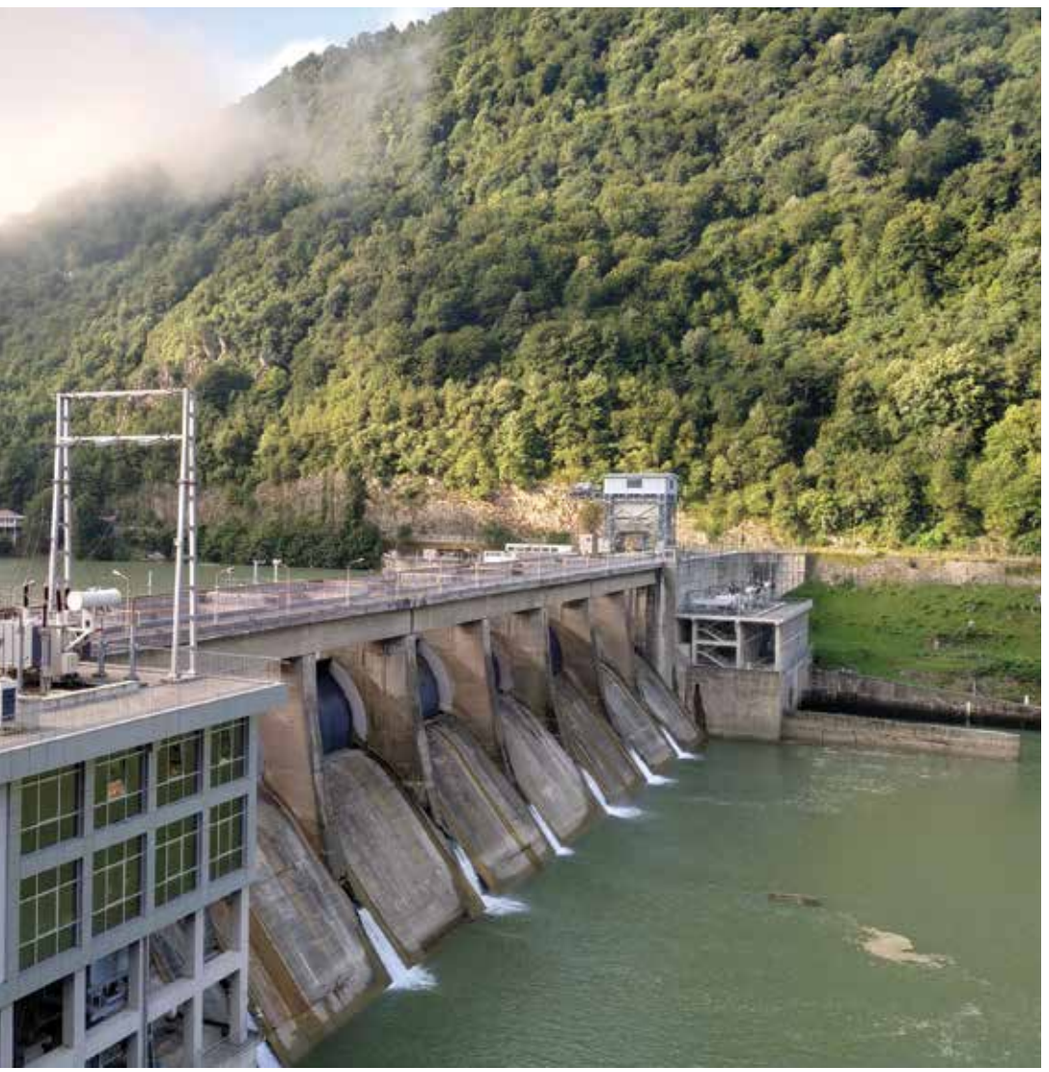
A: EPS plans to revitalize all hydropower plants that have not yet been revitalized. These include Bistrica, Đerdap 2, Potpeć, and the Vlasinske hydropower plants. The revitalization of the Potpeć hydropower plant also includes constructing a new fourth unit. The importance of revitalizing existing hydropower plants is significant, as it extends the operational life of these facilities, which are crucial for the security of the power system and the transition to renewable energy sources. The revitalization of hydropower plants is financed through loans provided by the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD).

REVITALIZATION OF THE ĐERDAP HYDROPOWER PLANT

The revitalization of the last unit, A3, at the Đerdap 1 hydropower plant was completed on November 13, 2023. After the revitalization, the capacity of Đerdap 1 increased from 1,058 MW to 1,140 MW, and the capacity of each unit in this hydropower plant is now 190 MW. Hydropower plants contribute 36.5 percent of total electricity production.

Q: The construction of the reversible Bistrica hydropower plant is also planned as one of the state's and EPS' strategic projects. What is its significance, and what will it enable? What capacity will the power system gain from constructing the Bistrica reversible hydropower plant?

A: The Bistrica reversible hydropower plant is recognized as a key project that will enable the integration of planned variable renewable energy sources (wind and solar). By implementing the Bistrica reversible hydropower plant with a planned capacity of 628 MW in pumping mode, the required energy and power reserve will be provided to balance variable renewable sources. The benefits of this project are multiple for the entire power system. The significance of the Bistrica reversible hydropower plant lies in its energy storage capacity, which allows for system balancing by producing electricity when it is most needed. The feasibility study has been completed, the environmental impact assessment study is expected to be completed soon, and it is essential that we have received confirmation that the Japan International Cooperation Agency (JICA) is interested in the project.



Q: What investments in new renewable energy sources and hydropower plants are planned by 2030, and how significant is this in terms of EPS's total investments?

A: By 2030, the planned investments in hydropower plants and renewable energy sources will have amounted to 3.6 billion euros or more than 500 million euros annually. Total investments during this period are estimated at around 7 billion euros, meaning that planned investments in hydropower plants and renewable energy sources account for more than half of EPS' total investments. These investments will ensure energy supply security and a gradual transition to sources that do not emit greenhouse gases. The energy produced from these sources will contribute to energy independence and security.

Q: What share of renewable energy sources do you expect to achieve by 2030? What new projects can you announce?

A: Regarding the power plants owned by the Electric Power Industry of Serbia, we expect the share of renewable energy sources (hydropower plants, solar, wind) to be around 38 to 39 percent by 2030. If we include the planned energy that we purchase from independent renewable energy producers through various mechanisms (feed-in, premiums, purchase agreements), it is estimated that the share of renewable energy in our portfolio will be around 44 to 45 percent. This aligns with the state's strategic energy documents that have been adopted or are in the process of adoption (Integrated National Energy and Climate Plan and Energy Development Strategy).

Interview by Mirjana Vujadinović Tomevski

HOW CAN RESIDENTIAL COMMUNITIES TAKE ADVANTAGE OF THE ENERGY TRANSITION

The energy transition, which involves shifting from fossil fuels to clean and renewable energy sources, entails the democratization and decentralization of electricity production and consumption. Residential buildings, especially in larger cities where they comprise most of the housing facilities, play a crucial role in this transition by recognizing and utilizing the benefits of the new legal concept known as the prosumer model.

In addition to the obvious financial savings on electricity bills—since buildings can now produce their own electricity by installing solar panels on their rooftops—this model also allows residential communities to contribute to producing energy from renewable sources and reducing greenhouse gas emissions.

Although legislative changes from 2022 enable both individual households and residential communities in Serbia to become prosumers

Photographs: GIZ

by installing solar panels on their roofs, the number of residential communities that have taken advantage of this opportunity is extremely small. While thousands of individual households are currently registered as prosumers, there are only three residential communities.

The Journey of a Thousand Miles Begins with the First Building!

German Development Cooperation provided financial and organizational support to one interested residential community in Novi Beograd, which decided to become a prosumer. This initiative, which includes the installation of a 15kW solar power plant on the roof of a building on Nehru Street, aims to serve as an example and a source of information for other residential communities considering a similar venture.

In this pioneering project, seven apartment owners in a four-story building decided to jointly invest in the solar power plant, each contributing equally to 2kW shares. The remaining 1kW of the plant's capacity will be used for communal consumption within the building, further reducing maintenance costs.

This residential community, selected via a public competition, received professional support and financial participation in purchasing and installing the solar power plant, which is now on the verge of being connected to the distribution grid. This is the first such power plant owned by multiple residents within a single residential community. All of them will benefit from the savings reflected in their electricity bills.

Based on the experiences gained in cooperation with this residential community, German Development Cooperation, in partnership with the Ministry of Mining and Energy, has prepared a guide for residential communities that wish to become prosumers. The guide is expected to be published in the fall. It will provide comprehensive information and guidelines for residential communities that want to embark on the energy transition path and the self-production of electricity.

Measure Twice, Cut Once!

To further facilitate the decision-making process, German Development Cooperation has also adapted its solar calculator (www.solarnikalkulator.rs) to the specific needs of residential communities. This tool allows both individual households and residential communities to easily estimate the optimal capacity and size of a solar power plant in relation to the needs of the apartments and the available roof space.

In addition to promoting the prosumer model, German Development Cooperation is actively engaged in raising awareness about energy efficiency. In the upcoming period, special attention will be given to demonstrating the technical and financial viability of investing in combined measures—on the one hand, in energy efficiency (e.g., thermal insulation, window, and door replacement, etc.), and on the other, in renewable energy sources such as photovoltaic panels, solar collectors, and heating and cooling systems like various types of heat pumps.

You Get the Transition You Pay for!

Despite the apparent success of the Novi Beograd project, a broader wave of similar investments will depend on the availability of funding for such projects. Public utility companies that serve these buildings with their existing services are well-positioned to offer carefully designed financing options to their current customers, the apartment owners in these buildings, such as low-interest loans, financing (in installments) through service bills, or payment schemes that charge installation costs in phases through the savings achieved on electricity bills.

For More Prosumer Residential Communities, We Must Work Together!

The pioneers in Novi Beograd, specifically the residential community whose solar power plant is about to be connected to the grid, provide a demonstration and a successful example enabled by cooperation and partnership between communities, government, and development partners. This partnership approach should continue and include other stakeholders such as the public utility sector, banks, equipment manufacturers, etc. The keyword for more residential communities with prosumer status remains—together!

GIZ

NEW CHARGERS FOR IMPROVING E-MOBILITY

During the summer season, the number of electric cars on Serbia's roads is continuously growing due to their increasing popularity in Europe. Although the infrastructure represents one of the main obstacles to the faster development of e-mobility, Serbia is gradually improving the network of chargers for electric vehicles. Each new charger placed in a carefully selected location enhances the ability to charge, making electric vehicle travel more accessible and affordable.

The company Charge&GO is one of the leading actors in this transformation, significantly contributing to the expansion of the charger network, both in urban areas and on key roads. Their latest project involves deploying some of the most powerful chargers in their range. It is also new that some parts of Serbia will receive their first chargers thanks to this company's venture.

To begin with, when it comes to urban areas, at the OMV gas station on Ada Ciganlija, Charge&GO installed a 50-kW fast DC charger equipped with three different types of connections: CCS, CHAdeMO, and Type2. CCS is the European standard for fast charging of electric vehicles. It uses direct current (DC), while CHAdeMO is the Japanese standard for DC fast charging, which, although somewhat rarer in Europe, has found its place at the new location in Belgrade. Third connection – Type2, the most common connection in the European Union intended for AC charging, is often used when the car is parked for several hours in a shopping center, at the workplace, or, for example, during the picnic at Ada Ciganlija. One of the advantages of this charger is that it allows users of different models of electric vehicles to charge the battery while performing a whole range of activities.

The next innovation is at the OMV gas station Obilaznica Surčin 2, where drivers now have access to a new,

Photographs: Charge&GO

For those looking for maximum charging speed, Charge&GO at the OMV gas station Zemun will soon offer a fast DC charger with a power of up to 240 kW, with two CCS connections

more powerful DC charger with a power of 150 kW, equipped with two CCS connections. Such chargers are often placed along highways where charging should take as little time as possible, although such models can also be found in cities.

The most powerful charger in the network

For those looking for maximum charging speed, Charge&GO at the OMV gas station in Zemun will soon offer a fast DC charger with a power of up to 240 kW and two CCS connections. It will be the most powerful charger in the network, designed to allow high-speed charging with minimal breaks, which will be especially important for drivers who often travel long distances.

Apart from the broader area of Belgrade, in the northeast of Banat, in Kikinda, a slow charger with a power of 22 kW has been installed, while Nova Crnja is waiting for the first DC charger of 60 kW, which will soon be put into operation. This charger represents the first step towards improving e-mobility in this part of the country, enabling a more even development of infrastructure and support for electric vehicles throughout the territory of Serbia.

In addition, the company has redesigned its website, making it more transparent and modern, so users can now more easily find information about charger locations and available services.

Charge&GO gives its users access to a network of over 400,000 chargers across Europe through their application. All that is required is to send a request via email, and after signing the contract, users get access to a network of chargers abroad. The application offers a map with all available chargers and navigation that takes the user directly to the nearest charger, making navigating a foreign country easier. It is necessary to send

a request for this service to podrska@chargego.rs. By sending a request for the roaming option to the same email, registered users abroad also have the possibility of charging.

In the coming period, the company will continue to contribute to the development of e-mobility in Serbia, providing drivers of electric vehicles with more and more opportunities for fast and efficient charging, whether in the city, on domestic highways, or preparing to go abroad.

Prepared by Milica Vučković

ENERGY TRANSITION IN SERBIA – CHALLENGES AND POTENTIAL

The energy transition in Serbia has become a burning issue in recent years, especially after a significant increase in the capacity of renewable energy sources (RES). However, despite Serbia managing to almost double these capacities compared to 2022, it still lags behind many countries in the region. In an effort to understand why this is the case, we spoke with Jovan Rajić, the founder and head of the legal team at the Regulatory Institute for Renewable Energy and Environment (RERI), who revealed the main challenges Serbia faces on its path to energy transition and outlined key steps that can lead us to the desired goal.

Mr Rajić explains that the increase in RES capacity in Serbia is partly a result of the adoption of the new Energy Law, which established a solid legal framework for further sector development. However, issues arose due to delays in adopting secondary legislation, resulting in the first auctions occurring only last year. Although these auctions represent a significant step forward, our interlocutor reminds us that they were completed with partial success, particularly regarding solar and wind energy projects. He also adds

Democratization of the energy sector, along with decentralization and decarbonization, are key factors for a successful transition

Photograph: Unsplash/Karsten Wurth

that investors in the energy sector expect legal certainty and a clear and predictable business environment based on market principles and competition rules. Although Serbia has significant natural potential for RES development, especially in the solar and wind areas, our interlocutor notes that the current business environment is not attractive enough.

"What every country needs to provide for investors is legal certainty and a clear and predictable business environment based on market principles, competition rules, and equal opportunities for all market participants. If this exists, and considering the undeniable natural potential that our country has for developing RES projects, especially in solar and wind, then the interest of investors should not be questioned at all. Unfortunately, the business environment in our country is such that it does not guarantee the fulfillment of all these prerequisites I mentioned, so maybe this is where we should look for the reasons for this lag behind the region. The high level of corruption in all areas of society and direct contracts have not unfortunately spared the energy sector", says Mr. Rajić.

He underlines that the so-called strategic partnerships, recognized in the Energy Law, are not necessarily the solution to these problems. For instance, last year's tender from the Ministry of Mining and Energy for the construction of solar power plants with a capacity of 1 GW caused controversy due to restrictive conditions that are hard to fulfill.

Goals by 2030 – Ambition or Reality?

The recently adopted Integrated Plan for Energy and Climate sets ambitious goals for Serbia, stating that by 2030, 45 percent of electricity should come from RES. However, the question arises as to how realistic these goals truly are. Namely, the Energy Community Ministerial Council set a target of 40.7 percent of RES in gross final consumption for Serbia by 2030, which many experts have assessed as overly ambitious.

Photograph: Unsplash/Mariana Proenca

"I have the impression that in Serbia, no strategic documents, such as plans, strategies, etc., are given due consideration. These documents should be prepared according to the highest possible standards of professional involvement and participation and informing the relevant public so that the end of the process yields solutions that will outline the path for all relevant regulations and their implementation. However, public policy documents are viewed as legally non-binding acts, which we adopt just to tick off some item of a specific accession chapter or to receive a positive assessment from the Energy Community", our interlocutor adds. He also points out that a realistic goal has been set only for Bosnia and Herzegovina and how relevant regional

Without a specifically devised, clear, and realistic action plan or defining how certain goals can be achieved, it won't be possible to accomplish them

institutions approach drafting these documents and setting goals, which they consider non-binding in a broader context.

Instead, Serbia must abandon the practice of adopting strategic documents solely to fulfill formal obligations to international bodies and focus on creating concrete, achievable plans that will enable a sustainable energy transition.

"Without a specifically devised, clear, and realistic action plan or defining how certain goals can be achieved, it won't be possible to accomplish them. It seems that decision-makers are hoping for some miracle, wishing for a "market-driven energy transition" that will save them and help them fulfill their commitments. I am afraid that won't happen on its own. At least not in a sustainable way", Mr Rajić warns.

A market-oriented incentive model for RES

A market-oriented incentive model for RES producers was recently introduced. Mr Rajić believes that was a significant step forward compared to the previous model of fixed feed-in tariffs. However, many experts question the need for any incentives, given current electricity prices and the availability of technologies, but believe that RES projects can be self-sustaining without additional subsidies.

"As a lawyer, I could not comment on these economic segments of the development of RES projects. I am confident that any public bidding process must take place with absolute respect for the principles and rules of the competition and transparent provision of all information, not only for the participants in these procedures but also for the entire public," explains Mr Rajić.

Democratization of the energy sector, decentralization, and decarbonization are key factors for a

Photographs: (middle) Unsplash/Bernd Dittrich; (rop right) Unsplash/Casey Horner

successful transition. It is essential that in addition to large-scale investments, the focus should also be on smaller projects, consumers, and local communities, which can bring rapid and significant changes at the local level.

Prosumers as the key to the energy transition

Prosumers, citizens, and companies that produce and consume energy themselves are becoming increasingly important actors in the energy transition process. About 3,200 prosumers are registered in Serbia, but the number could be significantly higher with adequate state support.

"The state must create a good legal framework and ensure its implementation for all participants under equal conditions. I am not entirely sure how much the state understands the importance of prosumers and how much it is ready to invest in them. I have to be completely realistic and admit that this is not the case only with our country, as well as in a large number of other countries. There is still that entrenched opinion that citizens are only consumers, not producers, and that power production is an activity that only large energy companies do, mostly state-owned. But everything is conducive to change, and so does the concept of energy producer. Power production is no longer the privilege of only large energy systems, as attention must also be paid to other market participants. Look at the boom that Spain has experienced in the last couple of years or the good practices in Greece. So, it can be done", he concludes.

The state must recognize the importance of consumers and invest in them, just like Spain and Greece have successfully done

Mr Rajić believes that clear procedures, administrative accessibility, and timely information are essential for increasing the number of consumers in Serbia. Although some important laws and regulations related to prosumers have recently been harmonized, there are still obstacles, such as unclear procedures and administrative bottlenecks.

Also, most of the investments are financed from their own funds, which indicates a lack of favorable credit conditions and information about them. The state must recognize the importance of consumers and invest in them, just like Spain and Greece have successfully done.

In conclusion, Mr Rajić notes that Serbia is facing numerous challenges in the energy transition and reforms in the legal framework; the fight against corruption and greater involvement of citizens and local communities are essential. Also, our country needs a clear plan for the closure of coal-fired thermal power plants because only in this way will we succeed in achieving the ambitious goals set for 2030 and catch up with the developed countries of Europe.

Prepared by Milena Maglovski

Photograph: Unsplash/Mark Merner

A CENTURY OF THE INNOVATIVE HERITAGE OF ABB AUTOMATIC FUSES

In the world of electricity, miniature circuit breakers (MCBs) are true 'hidden heroes' that ensure the smooth and safe flow of electricity. These devices are key to protecting electrical systems in homes, industrial plants, and infrastructure worldwide, and they have become the cornerstone of modern electrification. On the cusp of its centenary, the ABB circuit breaker stands out as the industry standard in terms of performance, compactness, connectivity, and transparency.

Since 1924, when Hugo Stotz patented the first automatic fuse, ABB has continuously improved these devices to meet increasing market demands and environmental standards. Today's ABB circuit breakers have become synonymous with safety and sustainability, which is especially important in the global energy transition towards net zero carbon emissions.

Technological revolution and sustainability

As the world moves towards zero CO2 emissions, circuit protection technologies are becoming crucial for a safe and sustainable transition to renewable energy sources. The original ABB circuit breaker sets high standards for integrating renewable sources into power grids. Its flexible design allows for faster and simpler installation, which is especially important at a time when the industry is facing a shortage of highly skilled labor.

The ABB circuit breaker is designed to respond to short circuits or overloads within 10 milliseconds, ten times faster than the blink of an eye. This speed is key to preventing damage and protecting property, while the high temperatures that the

Photograph: ABB - The production plant of circuit breakers in the factory ABB STOTZ-KONTAKT in Heidelberg

Since 1924, when Hugo Stotz patented the first automatic fuse, ABB has continuously improved these devices to meet ever-increasing market demands and environmental standards

fuse can withstand (from 5,000 to 6,000 degrees Celsius) ensure longevity and reliability. Users can easily reset the device, which reduces the need for replacement and allows a faster return to normal operation.

The future of energy efficiency

In response to the increasing need for electrification and the integration of different sources of renewable energy, ABB develops products that must withstand higher electrical loads and supply variations. ABB offers protection for various applications, from solar panels and heat pumps to electric vehicles, including residual current, surge, and arc protection.

The latest generation of ABB S300 P circuit breakers carry the EcoSolutions™ label, meaning these devices are manufactured from highly recyclable materials. Through transparent processes and QR codes, ABB provides detailed information on the circularity of its products, ensuring responsible handling at the end of their life cycle.

These devices not only ensure safety and reliability in protecting electrical systems but also contribute to reducing energy losses by up to 20 percent compared to previous generations. Such advances are key to reducing the carbon footprint and supporting global sustainability goals.

As technology evolves, future devices will continue to play a key role in protecting electrical installations, providing safety and efficiency in branched parts of power grids.

During the autumn, ABB Serbia will mark the centenary of automatic fuses through a series of activities, including presenting innovative technologies at the 14th CIRED consultation. These events will highlight ABB's role in the energy transition and their contribution to global sustainability goals.

Through its commitment to innovation, environmental responsibility, and energy transition, ABB continues to shape the future of electrical systems, enabling a safe and sustainable path to a greener future.

For more information, visit ABB Stories – Energy Transition.

ABB

Eco Solutions™

Photographs: ABB

HOW ENERGY EFFICIENCY SHAPES THE FUTURE OF SERBIA

Serbia is facing serious challenges when it comes to energy efficiency. With energy consumption approximately 3.5 times higher than the European average, it is clear that there is significant room for improvement. According to Eurostat data from 2022, Serbia's energy intensity is 1.8 times higher than the European Union's, indicating a need for radical changes in energy usage. Over the past decade, Serbia has made significant efforts to increase energy efficiency through various action plans and regulations, but achieving further savings and reducing energy consumption remain key priorities on the agenda. We spoke with Antonela Solujić from the Chamber of Commerce and Industry of Serbia about energy efficiency, energy transition, and the rational use of energy.

Q: Serbia consumes about 3.5 times more energy than the European average. How can this be changed to save energy?

A: Serbia has an energy intensity about 3.5 times higher than the EU average, meaning that three and a half times more energy is consumed

Photograph: Unsplash/Daniele la Rosa Messina

in Serbia to produce one unit of gross national income than in the European Union. If this parameter is adjusted for purchasing power parity, then according to Eurostat data, in 2022, it was about 1.8 times higher in Serbia than in the EU. This highlights the need for Serbia to focus heavily on improving energy efficiency, as implementing energy efficiency measures can enable further economic growth while reducing energy consumption and increasing competitiveness, as well as enhancing the quality of life across all sectors. This is further evidenced by the fact that, since 2010, Eurostat data shows a significant reduction in energy intensity adjusted for purchasing power parity—over 30 percent. During this period, Serbia began planning and implementing energy efficiency measures through energy efficiency action plans (APEE), establishing the first legal framework and incentives for energy efficiency through the Law on Efficient Use of Energy.

According to the 4th Energy Efficiency Action Plan, implementing the three APEE plans from 2010 to 2018 resulted in final energy savings of around 0.661 Mtoe, or about 7.7 TWh. It's important to understand that when we talk about energy efficiency measures, we are not only referring to technical measures but also to raising awareness about energy efficiency and its benefits. Everyone must start paying attention to their energy consumption. Additionally, it is essential to provide appropriate incentives.

Q: How important is energy efficiency in the energy transition process?

A: Energy efficiency (EE) is undoubtedly one of the key policies in the fight against climate change. It contributes to reduced import dependence, increased economic competitiveness, higher living standards, reduced negative impacts of the energy sector on the environment, regional development promotion, and more. The EU recognized energy efficiency as a key policy contributing to cost-effective GHG emission reductions with numerous additional benefits through the implementation of its first programs in the 1990s.

In Serbia, the Energy Development Strategy (covering the period until 2025) recognizes energy efficiency as a 'new energy source.' Since 2010, through the Energy Community Treaty, it has set and implemented activities to meet goals in this area, following EU policies. In 2018, as part of the Clean Energy for All Europeans package, the EU adopted the Regulation on the Governance of the Energy Union and Climate Action (RGOV), which introduced the obligation to develop Integrated National Energy and Climate Plans (INECP). For the first time in synergy, these plans set goals for reducing GHG emissions, increasing energy efficiency, and

Energy efficiency is undoubtedly one of the key policies in the fight against climate change

ANTONELA SOLUJIĆ graduated in mechanical engineering and currently holds the position of senior energy efficiency advisor in the Energy Association of the Chamber of Commerce and Industry of Serbia. She attended several specialized trainings in energy efficiency, renewable energy sources, sustainable development, and climate change. Ms Solujić is a member of the Negotiating Group for Accession to the European Union.

Photographs: (bottom) Pixabay/Christel; (Solujić) courtesy of Antonela Solujić

promoting renewable energy sources, considering that some measures simultaneously impact achieving multiple objectives.

The significance of EE in the context of energy transition and combating climate change in Serbia is reflected in the fact that around €20 billion, or about 67 percent of all investments planned within the Integrated National Energy and Climate Plan (INECP) by 2030 (adopted by the Government of Serbia on July 25, 2024), will be directed towards energy efficiency measures. Approximately 20 percent of this funding (€5.8 billion) will focus on measures impacting decarbonization. The government plans to support the implementation of these investments through various incentive mechanisms, covering about 40 percent of the investment.

Q: What are the best energy efficiency measures in terms of practicality and effectiveness?

A: Based on the results of the EE measures implemented in the four APEE plans, it has been estimated that regulatory measures contributed the most to savings. These include, first and foremost, the introduction of minimum EE requirements in specific sectors, such as building regulations (implemented since 2012), regulations on limiting CO2 emissions for new passenger and light-duty vehicles, and regulations on energy labeling of products, as well as the establishment of the Energy Management System (SEM).

Energy consumption sectors are highly diverse, making it difficult to compare the cost-effectiveness of specific measures across these sectors. However, according to the literature, tracking and rational management of energy consumption, combined with regular maintenance of technical systems, can reduce energy consumption by up to 10 percent, with little or no cost.

So far, within SEM, the most significant savings in the production sector have been achieved through monitoring consumption, analyzing measured data, and improving energy management procedures. These measures tend to yield better results when combined with awareness-raising initiatives for employees and the general public. Among the most cost-effective measures are replacing lighting fixtures or light sources with more efficient ones.

According to the results of energy audits in 10 small and medium-sized enterprises (conducted in 2021 as part of the project Technical Assistance to the Ministry in Charge for Energy and Relevant Public Entities for Implementation of New Energy Law, National Action Plan for Energy Efficiency, and the Renewable Energy Directive), measures in the industrial sector pay off relatively quickly.

In households, energy-saving measures can be implemented, such as managing energy consumption via thermostatic valves, appropriate ventilation methods, adjusting water heater temperatures, refrigerator cooling temperatures, room cooling temperatures, etc. Replacing light sources with more efficient ones is also a measure that pays off relatively quickly in households. However, investment measures in energy efficiency for buildings generally require more serious funding.

Q: What is the role of energy managers in the public sector?

A: The Energy Management System (SEM) was introduced into Serbia's legal framework in 2014. It has been regulated by the Law on Energy Efficiency and Rational Use of Energy since 2021 (ZEERUE) and its bylaws. SEM mandates the organized monitoring and management of energy flows and the implementation of energy efficiency measures to achieve energy savings for entities required to comply with the Energy Management System.

SEM entities are obliged to plan EE measures through three-year programs and annual plans and to report annually to the ministry responsible for energy on achieved savings.

The SEM's key figure in these entities is the energy manager (EM),

Photograph: Unsplash/Ant Rozetsky

who must have appropriate qualifications, have completed official training at an authorized organization, passed an exam, and obtained a license in accordance with the law. In addition to their education and experience, the EM's training enables them to monitor and analyze energy consumption, identify areas with high energy use, determine necessary measures, initiate the implementation of these measures, monitor their effects, and report on them.

Two information systems, SEMIS and ISEM, have been established in accordance with the law to support SEM implementation. SEMIS is used to report to the ministry, while ISEM enables the monitoring and analysis of energy consumption data in buildings and public lighting systems within the public sector.

Q: How can energy efficiency (EE) be financed?

A: While investing in EE seems logical, as it reduces energy costs and the measures often pay for themselves in the short or long term, in practice, this is usually not the case. The reasons can include a lack of investment funds, long payback periods, a lack of awareness and understanding of the potential effects of EE measures, the existence of certain market barriers, etc. Therefore, for successful implementation of EE improvement policies, appropriate incentives must be provided, such as subsidies, tax relief, favorable loans, guarantee schemes, energy services through public-private partnerships (ESCO), a combination of multiple financing sources, and more. These incentives must be tailored to specific sectors based on careful analysis, with an effort to minimize market disruption and use state incentive funds effectively.

Since 2014, Serbia has been subsidizing programs focused on improving EE. From 2014 to 2021, subsidies were provided by the Ministry of Mining and Energy through the Budget Fund for Energy Efficiency. Until 2021, funds were exclusively allocated for renovating buildings of significance in local self-government units (LSGUs), through which over 100 projects were completed. Since 2021, projects subsidizing citizens in cooperation with LSGUs have been piloted. All these mechanisms have been taken over by the Directorate for Financing and Promotion of EE.

Support for the renovation of the residential sector is currently being implemented through the projects "Clean Energy and Energy Efficiency for Citizens in Serbia" and "Energy Renovation of Residential and Public Buildings," which the Ministry of Mining and Energy is carrying out in cooperation with local self-governments, funded through loans from the World Bank and the EBRD. Additionally, this ministry is implementing several other projects to improve energy efficiency (EE) in buildings under the public sector's responsibility.

Energy services provided by the private sector to public sector users are executed through public-private partnerships (PPP). In the recent period, there has been considerable interest in applying this financing model for improving EE in public lighting, with more than a third of all awarded PPP contracts being for such projects. The fact that approximately €20 billion needs to be invested in EE improvement measures by 2030 shows the vast needs, and to use these funds effectively, appropriate incentive mechanisms must be developed, awareness must be raised, and technical assistance must be provided where necessary.

Q: Energy certificates have been mandatory since 2012. How are they issued, and what does it mean when a building has an energy certificate?

A: Buildings are major energy consumers. In the EU, around 40 percent of total final energy consumption is used in buildings, and a similar situation exists in Serbia. To reduce energy consumption in buildings, EU regulations, which have been adopted in Serbia, introduced the concept of building energy performance, which indicates a building's energy use. Minimum energy performance requirements, i.e., maximum allowable energy consumption, are prescribed for new buildings and buildings undergoing major renovations, according to their intended use. To allow for clear comparisons of building efficiency, which is especially important in leasing or purchasing, buildings are categorized into energy classes based on prescribed calculation methods.

The energy performance and energy class of buildings are

Photograph: Unsplash/Ant Rozetsky

determined by issuing energy performance certificates (commonly known as energy passports). While the EU certification is based on total annual primary energy consumption in buildings, in Serbia, certification is based on the annual required heating energy per square meter of the building's usable area—QH (kWh/m²a). Based on efficiency, buildings are classified into eight energy classes, from A+ to G, with A+ being the best energy class, representing the lowest specific energy consumption. New buildings must achieve at least a C class, while buildings undergoing energy renovations must improve their class by at least one level. In addition to energy consumption data, energy passports contain technical and other information about the building and a summary of energy efficiency improvement measures that could be implemented to save money.

Every new building in Serbia must be designed and constructed so that it does not exceed the maximum allowed annual energy consumption for heating, as prescribed. An energy passport is mandatory for all new and existing buildings after reconstruction, extensive renovation, or energy retrofitting. According to the 2023 amendment to the Law on Planning and Construction, an energy performance certificate for the building or part of it must be attached when concluding a sale or lease agreement. Under this amendment, public-purpose building owners must possess energy passports by August 2026, owners of commercial buildings by August 2028, and owners of residential buildings must secure energy passports by August 2034.

The Ministry responsible for construction maintains the Central Register of Energy Passports (CREP) and grants authorizations to organizations (business entities and other legal entities) for conducting energy certification.

An energy passport is mandatory for all new and existing buildings after reconstruction, extensive renovation, or energy retrofitting

Q: What role does energy efficiency (EE) play in Serbia's energy transition?
A: As the Integrated National Energy and Climate Plan (INECP) indicates, energy efficiency will play an exceptionally significant role in Serbia's energy transition. The INEKP envisions a well-balanced combination of policy, financial, fiscal, and regulatory measures in the building sector to support energy renovation of buildings and achieve a specific rate and level of renovation, applying the most cost-effective individual heating and cooling technologies. Total investments are projected at around €5 billion.

Current renovation programs show that, despite the higher percentage of subsidies available for implementing multiple EE measures (comprehensive renovations), most citizens are applying for individual measures. This suggests that we will need to consider phased building renovations to reach the required levels of renovation and reduce energy consumption to the desired level. The EU has recognized this need and aims to achieve a very ambitious level of EE in buildings—so-called zero-emission buildings. In the latest version of the Energy Performance of Buildings Directive (EPBD), the concept

Photographs: (top) Pixabay/StockSnap; (middle) Pexels/Stefan Pantić

of the building renovation passport was introduced.

The purpose of this passport is to identify EE measures that need to be implemented for a comprehensive renovation of the building. Given the expected phased renovations, the focus, from a technical standpoint, is on the correct order of implementing EE measures to avoid, for example, replacing a boiler before installing insulation, which would miss the full EE potential of that building. It is crucial to apply this principle to all types

of buildings. It is also essential that when the state provides incentives for building renovation, EE requirements for entire buildings and individual building elements (or heating systems) exceed the minimum set by regulations, which are still not fully aligned with EU regulations. This is essential because these measures have a long lifespan, and if, for example, you fail to install more efficient windows during renovation, you will miss the energy-saving potential for at least 15 years, the estimated lifespan of these measures. EE criteria should be carefully considered from both a technical and economic perspective.

In the industrial sector, where EE measures are the most complex, alongside implementing energy management, energy audits are critical to identifying optimal EE measures, taking into account both technical and economic criteria. Currently, there are no incentive mechanisms established for financing EE measures or conducting energy audits in the industry, so it is important to introduce such incentives. Where incentives for new technologies already exist, EE criteria should also be considered.

Much emphasis is placed on electrifying the vehicle fleet in the transport sector. From the EE perspective, it is essential to ensure this process is aligned with the decarbonization of the electricity production sector.

Given the substantial financial investments required to achieve the serious goals in the upcoming period, it is crucial to incorporate EE criteria into incentive programs not primarily aimed at improving EE, where applicable. The principle of 'energy efficiency first' should be applied across various segments.

In addition to financial resources, if we want to implement EE improvement programs successfully, we must not forget the importance of raising awareness among the general public and continuously improving the knowledge of all program participants. Strengthening the capacity of institutions responsible for implementing these activities is also important.

Q: The Law on Energy Efficiency and Rational Use of Energy requires products that affect energy consumption to be labeled with energy efficiency labels before being placed on the market, along with other prescribed data regarding energy consumption. How important is this labeling, and what is its main goal?

A: Energy labeling has been one of the most effective policy measures in implementing the APEE since 2014 when this regulation was incorporated into Serbia's legal framework from the EU. It is expected to continue delivering positive effects in the future, especially since the latest amendments to the EU regulation have 'reset' the labels. Now, energy efficiency classes are marked from G to A (with G being the least efficient and A the most efficient). The plus marks are no longer used, and the efficiency requirements for each EE class have been increased. Suppliers (manufacturers, importers, authorized representatives) must label products subject to energy labeling requirements and provide the prescribed product data. This ensures that EE information, and where applicable, water consumption and noise levels, are available to potential buyers to consider when purchasing products. The new labels also include a QR code through which consumers can access the EPREL database for more detailed insights into the characteristics of specific product models.

Market analyses in the EU have shown that 93 percent of consumers recognize energy labels, with 79 percent considering them when purchasing products, contributing to the continuous improvement of EE in these types of products.

In terms of products that affect energy consumption, we must also mention the regulation on eco-design. This regulation introduces minimum energy efficiency requirements and prohibits the marketing and using products that do not meet such requirements. It also prescribes the method of evaluating the conformity of products with the requirements of eco-design. This regulation was incorporated into the Serbian legal system in 2021 through ZEERUE and certain by-laws.

These two regulations are closely related and jointly affect the improvement of EE products, which affect energy consumption.

Interview by Milica Radičević

SUSTAINABILITY STARTS ON THE ROOF

We live in a time when electricity demand will continue to increase, which is why renewable sources are becoming an indispensable part of modern business. In addition to environmental responsibility and contribution, renewable energy brings economic benefits to those who implement it. Solar power plants on the roof are just one of the efficient and sustainable ways of using solar energy to produce electricity, especially in urban areas where space is very limited. This type of renewable energy source is gaining importance in Serbia, where Vojvodina leads the way thanks to favorable climatic conditions, among other things.

Companies that decide to install solar panels soon realize their advantages – significant savings on electricity bills, later the possibility of selling excess energy produced back to the grid, and no less important, reducing pollution and protecting the environment of the cities in which they operate.

Every kilowatt-hour of solar energy produced reduces the need for fossil fuels, thereby contributing to the global mission to save the planet and improve your business.

The CEEFOR company once again participates in constructing a sustainable future in Serbia through the project of solar power plants on the roofs of a retail chain. The company's expert team is currently designing 14 solar power plants that will be built at locations across the country.

The project includes several destinations in Vojvodina, but also wider Serbia. Those destinations include Novi Sad, Temerin, Kać, Futog, Novi Bečej, Ruma, Subotica, Zrenjanin, Ćuprija, and Jagodina, with some places getting two power plants on the roofs of commercial buildings.

The largest solar power plant within the listed projects is located in Novi Sad, with a capacity of 160 kW

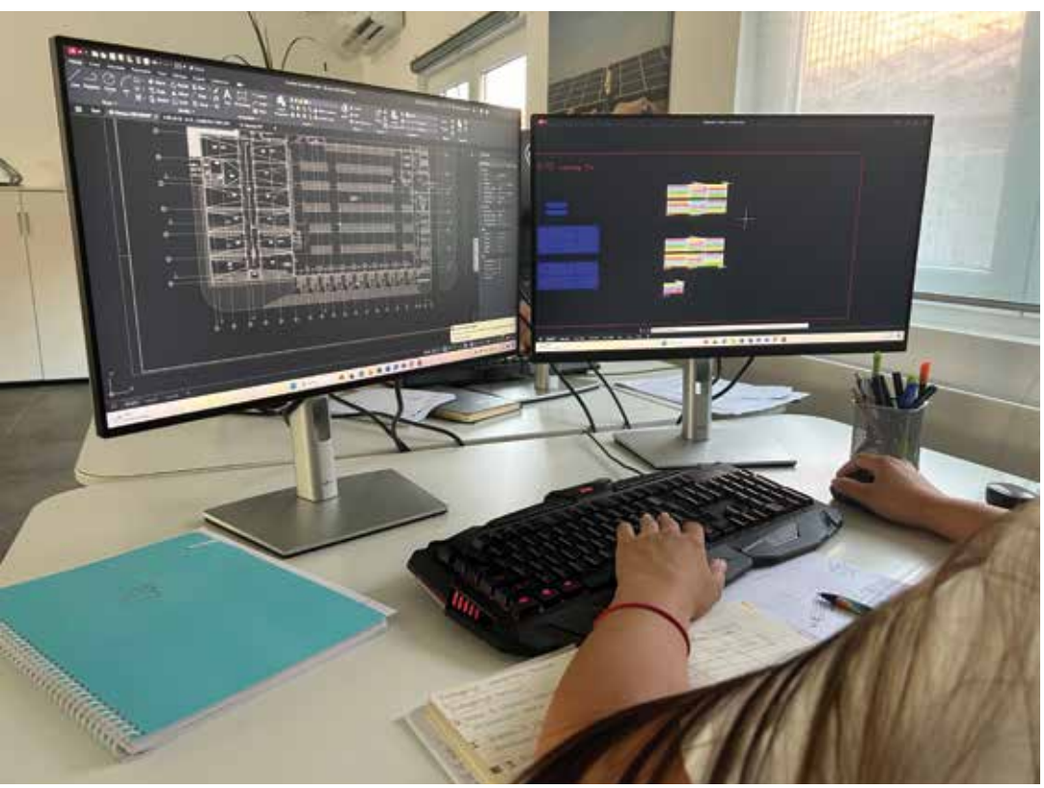
Photographs: CEEFOR

AC (205.2 kWp DC). With its 360 solar panels on the roof, the plant will provide an annual production of 222,356 kWh, which will reduce carbon dioxide emissions by as much as 103,430 kilograms per year – which can be compared to the amount of carbon dioxide that 4,500 trees would absorb in one year.

On the other hand, the smallest solar power plant in Kać, with a capacity of 20 kW AC (25.65 kWp DC) and planned 45 panels on the roof, should produce 27,457 kWh annually. Although it is smaller in capacity, the reduction of emissions in this case will amount to 12,901 kilograms of carbon dioxide per year.

Professional team and quality equipment

High-quality panels manufactured by Luxor Solar-570Wp will enable optimal use of solar energy, while inverters Fronius Symo 20.0-3-M and Huawei Sun2000 40ktl-M3 will ensure efficient system operation, adapted to the size of the power plant.



Every kilowatt-hour of solar energy produced reduces the need for fossil fuels, making you part of the global mission to save the planet and improve your business

The panel construction was carefully selected according to the specifics of these locations – from the D-dome construction for most buildings to the Chiko construction for the smallest power plant in Kać, where the tile roof was a challenge. Thanks to expertise in the work and application of various constructions, the project was successfully implemented on different types of roofs.

Each of these solar power plants, whether of smaller or larger capacities, is a step closer to a green future and encourages the use of renewable energy sources. Using existing rooftop space without additional land occupation, the project sets new standards in sustainable business, showing that business success and sustainability can go hand in hand.

The CEEFOR company, with its expert approach and commitment, proves once again that it is a leader in designing a sustainable future.

Use the power of the sun and improve your business with solar power plants on the roof. With the engineers of the CEEFOR team, your company can become a synonym for innovation, sustainability, and responsible business.

Prepared by Milica Vučković

FROM KEY PROJECTS TO FUTURE STRATEGIES

In a crucial period of energy transition, Montenegro has a clear goal: moving towards energy sources that are more sustainable and less harmful to the environment. This transition is a response to international obligations related to climate change and a key part of the national strategy to improve energy efficiency and environmental protection. We spoke with Saša Mujović, Montenegro's Minister of Energy, about ratifying international agreements, adopting new laws, and implementing major infrastructure projects, as well as Montenegro's commitment to achieving ambitious goals.

Q: How is Montenegro's energy transition progressing?

A: By ratifying international climate change agreements, Montenegro has committed to taking measures to implement the energy transition. The energy sector is recognized as the area that contributes the most to greenhouse gas emissions and is

Photograph: Pixabay/Sonja Czeschka

Montenegro has significant natural potential for developing renewable sources, which attracts great interest from investors. We have signed contracts for approximately 1.5 GW of production capacity through transmission system connection agreements, mainly from solar power plants

SAŠA MUJOVIĆ graduated from the Podgorica Faculty of Electrical Engineering's Department of Energy and Automation on November 9, 2001, with a thesis on "Optimal Power Flow Distribution," as the top student in his class. He participated in the 2002 Summer Academy 2002, a program aimed at the best students of technical sciences from Southeast Europe. Mr Mujović obtained his master's and doctoral dissertations at the Faculty of Electrical Engineering in Podgorica. His areas of scientific interest include power quality, operation, and planning of power systems and smart grids.

expected to play a significant role in stabilizing pollutant concentrations. The most important activities for reaching these goals include adopting the Law on the Use of Energy from Renewable Sources, which will accelerate the integration of solar and wind-based production facilities. We have also announced subsidies for various energy efficiency programs. Participants in these programs will directly reduce air pollution while achieving financial savings. As for EPCG (Electric Power Company of Montenegro), one of the pillars of energy development in Montenegro, they can boast of responsible and regular maintenance of production facilities. Two long-awaited projects stand out – the ecological reconstruction of the thermal power plant and the heating system project in Pljevlja.

Q: What does the Law on the Use of Energy from Renewable Sources bring? How much is being invested in renewable energy in Montenegro, and is the distribution and transmission network ready for new capacities?

A: The Law on the Use of Energy from Renewable Sources transposes the provisions of the EU's RED II Directive and provides a legal framework for promoting renewable energy. It will help Montenegro improve its incentive environment and achieve its goals for the share of renewable energy in total final energy consumption by 2030. One of the key provisions of this law is the introduction of auctions for allocating state incentives in the form of market premiums. This will gradually phase out feed-in tariffs and strengthen competition in the wholesale electricity market.

More importantly, this law will also establish the legal basis for creating renewable energy communities, an innovative model that will further value solar panel installation projects on rooftops and allow citizens to

Photographs: Pixabay/Pete Linforth; (Mujović) courtesy of Saša Mujović

benefit financially from the energy transition process.

Montenegro has significant natural potential for developing renewable sources, which attracts great interest from investors. We have signed contracts for approximately 1.5 GW of production capacity through transmission system connection agreements, mainly from solar power plants. Currently, the network cannot meet all investor demands; however, system operators are working intensively on strengthening the energy infrastructure so that it does not become a limiting factor for constructing new production facilities. Additionally, alternative solutions are being prepared to bridge the infrastructure gaps and allow the continued development of new power plants. We expect the development of the energy network to progress in parallel with the construction of new facilities, as outlined in the new Law on the Use of Energy from Renewable Sources.

Connecting Montenegro's electricity market to the unified European energy market is one of our most important strategic goals in the energy sector

Q: Why is the ecological reconstruction of the Pljevlja Thermal Power Plant important? How long will this reconstruction extend the plant's operational life?

A: The ecological reconstruction of the thermal power plant is an extremely important project for Pljevlja and Montenegro. It aims to adapt the plant's operations to meet the state's environmental protection commitments. Upon completion of the project, the plant is expected to be fully operational with limited emissions of nitrogen, sulfur, and particulate matter in compliance with the EU Large Combustion Plants Directive. This is one of the prerequisites for extending the plant's operational life, which is a pillar of stability for the country's energy system and provides about 40 percent of Montenegro's domestic electricity production.

Regarding the plant's future operations, it is almost certain that it will continue to operate for another 10 years after the reconstruction is complete. The complete phase-out of coal-powered production will depend on the pace of developing alternative sources, which will provide adequate substitutes for the missing energy.

Q: How significant are the Kruševo hydropower projects and those on the Ćehotina River, and when might they be realized? To what extent will they impact Montenegro's energy security?

A: The Kruševo Hydropower Plant will contribute an additional 200 GWh of energy annually, playing a crucial role in enhancing the flexi-

Photograph: Pixabay/Anton Lukin

bility of the electricity system, especially in balancing new intermittent energy sources such as solar and wind power plants. This will provide more capacity to integrate renewable energy sources into the electricity grid. The Kruševo project is currently in the phase of detailed geological investigations, while hydrological measurements have been ongoing since last year.

There are certain conceptual solutions from earlier periods in place regarding the power plants on the Ćehotina River. These projects require hydrological measurements, detailed geological examinations, and a final decision on the investment. The conceptual solution entails several hundred megawatts of cascading hydropower plants, with an annual production of over 300 GWh.

Q: What can you tell us about the reversible hydropower and solar power plant project on Lake Bileća?

A: A formal formation of a working group, consisting of three members from Montenegro and three from the Republic of Srpska, was agreed upon at the initial meeting held at EPCG (Electric Power Company of Montenegro) premises. In the coming period, we will be working a lot on these projects and the alternative water supply project in the Bay of Kotor. A floating solar power plant on Bileća Lake is one of the potential options for utilizing the joint territory, especially considering the proximity of the connecting energy infrastructure. I believe the project is interesting and could help overcome current challenges, benefiting all parties involved. One of the first steps in the upcoming period will be to develop project tasks and identify suitable locations for the floating solar power plant.

We also need to devise a project task and find land with the required features from the aspect of water sustainability and other geological features to create a potential reservoir and position it to construct a reversible hydropower plant.

Q: Montenegro has made significant strides in integrating into the European electricity market. Through which projects has this been achieved, and what is planned for the future?

A: Connecting Montenegro's electricity market to the unified European energy market is one of our most important strategic goals in the energy sector. Centralizing the wholesale market at the European level brings security and stability to the electricity supply, especially considering the future development of renewable energy projects. A liquid wholesale market is one of the prerequisites for introducing new market-oriented incentive systems for developing renewable energy sources, which will significantly ease the burden on the state budget and enhance competition in the market environment. Additionally, Montenegro must fulfill the conditions for market integration as soon as possible. This will allow for the continuation of the construction of the second submarine cable between Italy and Montenegro and temporarily exempt us from paying the cross-border carbon tax on electricity.

Q: What does the energy efficiency improvement program entail?

A: Since August 1st, Montenegrin citizens have had the opportunity to apply for €8.6 million in grants to implement energy efficiency measures in households. Of this amount, €7.5 million is allocated to support individual residential properties and units within collective housing structures (apartments), while €1.1 million is for thermal insulation of facades on collective housing buildings in the Pljevlja municipality.

This is the largest program of its kind for citizens in Montenegro, with a particular focus on northern municipalities to contribute to solving air pollution problems caused by fossil fuel combustion by improving energy efficiency. An amount of €5.8 million is allocated to support households in other Montenegrin municipalities.

The maximum grant amount for a single user is €10,000, with subsidy levels ranging from 40 percent for southern municipalities to 60 percent for those in the north. The Eco Fund, in collaboration with the Ministry of Energy and with the support of UNDP, is responsible for the program's implementation.

Interest in the program has been tremendous. In the first 20 days since the program was launched, over 2,000 people initiated electronic applications on the Eco Fund website, with nearly 1,000 completing them.

The plan is to continue implementing this and similar programs in the future. Through the Growth Plan, a new European Union support instrument for the Western Balkans, additional financial support is planned for the next four years.

Interview by Milica Radičević

K2 WALLPV – THE SYSTEM SOLUTION FOR SOLAR PROJECTS ON BUILDING FACADES

The new mounting systems from K2 add another dimension to the areas that can be used to generate energy. This is because they allow systematic and therefore fast PV installation on facades.

Most of the parts required for this are already well known, as the K2 development team has realised a clever modular system with only a few new elements. The K2 WallPV systems consist of a few tried-and-tested roof components and a few newly developed products.

The K2 WallPV systems can be used on a variety of façade claddings and are available in three versions:

THE K2 WALLPV FACADERAIL offers a first-class solution for facades made of solid masonry or concrete, as well as those in combination with rainscreen cladding and external thermal insulation composite systems (ETICS). The versatility of this system is particularly evident in its ability to be connected to the most common façade brackets.

THE K2 WALLPV CARRIERRAIL offers a solution for installation on facades, particularly on large commercial buildings fitted with FischerTHERM Carrier® and MONTANATHERM sandwich panels. This innovative installation solution is not only approved by the building authorities, but is also characterised by its high installation speed.

THE K2 WALLPV MULTIRAIL offers a versatile solution for installation on facades with trapezoidal sheet metal or corrugated sheet metal. This proven mounting solution utilises building authority approved thin sheet metal screws to ensure secure and reliable fixing.

The InsertionRail of the K2 WallPV MultiRail allows this system to be scaled up enormously in professional commercial construction. For smaller installations in workshops or mixed-use buildings, the K2 WallPV MultiRail also offers the flexibility and efficiency of the FacadeClamp module clamps.

Scalable modular components enable large-scale PV systems for sustainable energy generation, taking us a big step forward in the energy transition. What makes vertical PV systems even more attractive is that they have lower operating temperatures. And snow, leaves and rainwater do not remain on the modules. In addition, the yield can be even higher than with horizontally aligned PV systems due to the low position of the sun in winter.

So there are many good reasons in favour of these cleverly designed facade systems!

K2 Systems

Photograph: K2 Systems

THE ROLE OF HYDROGEN AND IRON IN AN INNOVATIVE SOLUTION FOR SOLAR ENERGY STORAGE

Although solar energy currently available in many countries could meet a significant portion of electricity needs, certain challenges are associated with this energy source. Solar energy is not consistently available. For example, there is more of it during the summer months than needed, while in winter, there is less of it because sunny days are rarer, and the sun sets earlier.

In the case of Switzerland, solar energy could cover more than 40 percent of electricity needs by 2050, but the challenge of its storage remains. Therefore, even though there is a surplus of solar energy in the summer, it cannot be made available in the winter when it is most needed.

As a solution, it is suggested that the excess solar energy produced in the summer be used to generate hydrogen, which would then be stored and used in the winter. The reason for this solution is that hydrogen can be used to produce electricity and heat. However, hydrogen storage presents a challenge of its own. It is highly flammable, easily spreads, and can make materials brittle. Special high-pressure tanks are needed for its storage, and cooling technology, which is expensive and energy-intensive, is also required. Finally, hydrogen has such properties that it can penetrate materials and cause leaks, which can lead to environmental problems and additional costs to stop the leaks.

Researchers at the Swiss Federal Institute of Technology (ETH) in Zurich, led by Wendelin Stark, a professor of functional materials at the Department of Chemistry and Applied Biosystems, have developed a new technology for seasonal hydrogen storage that is much safer and cheaper than existing solutions. It involves the use of the fourth most abundant element on Earth – iron, as well as the steam-iron process, known since the 19th century.

The steam-iron process uses iron to store and release hydrogen, allowing for efficient energy storage. When there is excess solar energy in the summer, it is used to electrolyze water and produce hydrogen. This hydrogen is introduced into a reactor filled with iron oxide. There, hydrogen reacts with iron oxide, removing oxygen and leaving elemental iron and water. In this way, the energy from hydrogen is stored in the form of iron.

During winter, when there is a need for energy, the process is reversed. Steam is introduced into the reactor and reacts with iron, converting it back into iron oxide, while releasing hydrogen. This hydrogen can then be used to produce electricity or heat.

The advantage of this process is that it uses a cheap and readily available material, iron, and allows long-term energy storage with minimal losses. Although the process is not perfectly efficient, it represents an innovative way to use solar energy during the winter.

"This chemical process is similar to charging a battery. It means that the energy in hydrogen can be stored as iron and water over long periods with almost no losses," the researchers explain.

They further explain that the reactor in which the reaction occurs does not need to meet special safety requirements. It consists of walls made of stainless steel only six millimeters thick, and the reaction takes place at normal pressure, while the storage capacity increases with each cycle.

However, the main drawback of using hydrogen remains its low efficiency, as up to 60 percent of energy is lost during production and conversion. This means that hydrogen is attractive as an energy storage medium only when wind or solar energy surpluses are available, and when other options are not feasible.

A pilot plant on the Hönggerberg campus, one of ETH's two main campuses, already demonstrates the technical feasibility of this technology, with plans to cover one-fifth of the campus's winter energy needs by 2026 using hydrogen stored from solar energy collected in the summer.

Katarina Vuinac

Photograph: Pixabay/Adege

INNOVATIVE "LIVING PLASTIC" DECOMPOSES IN JUST ONE WEEK

The fight against plastic pollution is crucial for the protection of natural resources and mitigating the climate crisis. Developing environmentally friendly solutions and reducing the use of plastic in everyday life are necessary steps to preserve the planet, and scientists from the Chinese Academy of Sciences have contributed to these efforts.

They have designed so-called "living plastic" that self-destructs when it begins to erode. This innovative material decomposes in compost in one month, compared to the 55 days required for traditional plastic.

The technology is inspired by enzymes produced by bacteria discovered in Japan in 2016, which naturally break down plastic, reports Science Alert.

Researchers have successfully embedded bacterial spores into the structure of polycaprolactone (PCL) plastic. As the plastic erodes, the spores begin to release enzymes that almost completely break down the plastic molecules.

By combining with lipase produced from the yeast Candida antarctica, the plastic degradation process was accelerated to just one week. Tests showed that the spores survive the high temperatures and pressures required for creating various types of plastic, including PET plastic.

The study by Chinese scientists was published in the journal Nature Chemical Biology, and their discovery provides hope for future sustainable materials that will reduce the problem of plastic pollution.

Although the use of biodegradable plastic and bioplastic is increasing today, they still represent a negligible portion of global plastic production. For example, bioplastic, which is made from renewable resources such as corn, sugarcane, or cellulose, currently accounts for only about one percent of the total 367 million tons of plastic produced worldwide each year, according to data from the European Bioplastics organization.

Energy Portal

THE FIRST CARBON CAPTURE AND STORAGE PROJECT IN ITALY

The first carbon capture and storage (CCS) project in Italy is known as the Ravenna CCS Project, launched exclusively for environmental purposes. Its goal is to reduce carbon dioxide emissions, contributing to the fight against climate change, particularly in industries that are difficult to decarbonize. The project is named after the region where it is located and will use depleted natural gas fields in the Adriatic Sea. It involves the permanent geological storage of carbon dioxide captured from the smokestacks of third-party industrial plants, transported via underground pipelines or by ship to the pumping station in Casalborsetti. In this project, oil and gas company Eni and energy infrastructure company Snam have joined forces.

The first phase aims to capture, transport, and store 25,000 tons of CO_2 per year from Eni's natural gas processing plant. After capture, the carbon dioxide is transported and stored at a depth of 3,000 meters in the depleted gas field. The facility already reduces CO_2 emissions from the smokestacks of the Casalborsetti plant by over 90 percent, and in some cases, up to 96 percent. This is especially important given the challenging conditions for carbon capture due to the low concentration of CO_2 and atmospheric pressure.

After completing this phase, a second phase is planned to begin in 2027, which aims to store up to four million tons of CO_2 annually. From 2030, the significant capacity of these reservoirs, estimated at over 500 million tons, could allow for an increase in volume, potentially reaching more than 16 million tons per year, depending on market demand.

According to a report by the Polytechnic University of Milan, a CCS facility with the potential to capture and store 16 million tons of CO_2 annually, with total costs over its lifetime of 38.4 billion euros (including investments and operating costs), could generate direct and indirect economic benefits of 79 billion euros. In the second phase, Ravenna is envisioned to become a reference CCS (Carbon Capture and Storage) center for Southern Europe and the Mediterranean.

Jasna Dragojević

Photographs: (left) Unsplash/Charlesdeluvio; (right) Pixabay/Digifly840

OIE SERBIA CONFERENCE 2024 – SEPTEMBER 23–24

The OIE SERBIA 2024 Conference, set to take place on September 23 and 24 at the Vrdnička Kula Ethno Complex in Vrdnik, is setting new standards for discussions on renewable energy in the region. This premier regional conference dedicated to renewable energy (RE) brings together key players from the industry, including global, regional, and local experts. The thematic focus of the conference encompasses all aspects of the energy transition, including new advancements, investments, technologies, integration of renewable energy into the electricity market, electromobility, sustainable development in transportation, and ESG strategies.

Overview of Current Topics

At the largest regional conference dedicated to renewable energy, discussions will also cover the challenges faced by European manufacturers of wind turbines, solar panels, and other equipment due to competition from China. The issue of electricity prices in the coming period will also be a key topic of consideration.

Expansion of Small Solar Power Plants According to Elektroprivreda Srbije (the Electric Power Industry of Serbia – EPS), as much as 36 percent of the country's electricity came from renewable sources last year, placing Serbia among European leaders. The expansion of small solar power plants has been particularly notable. As of August 1st this year, 3,404 prosumers with a total installed capacity of 66.2 MW have been registered in the Serbian Electric Distribution Register. OIE Serbia recently conducted a survey showing that the power capacity of prosumers has nearly quadrupled in the past year, indicating the growing popularity of electricity production for personal use among citizens and businesses.

The Role of OIE Serbia

The OIE SERBIA 2024 Conference provides a platform for addressing current issues and introducing new topics. This year, as in previous years, the organizers are bringing together key players from the green business sector. The speakers will include leaders in creating regulatory frameworks, international financial experts, bankers, CEOs, owners of companies involved in green development, electricity traders, and legal experts. Established in early 2021, the OIE Serbia Association is now the representative voice of the industry and a key partner for state institutions. The association creates a positive regulatory framework and a favorable investment environment. OIE Serbia is the only association in Europe that includes members such as the EBRD, the European Investment Bank, and the IFC group of the World Bank, along with Elektroprivreda Srbije, which plans to invest €5.4 billion in renewable energy projects by 2030. Other members include the most significant wind and solar power producers, contractors, and equipment suppliers.

Networking and Development

The OIE SERBIA 2024 Conference will be an excellent opportunity for all participants to strengthen existing connections and establish new contacts. Last year, the event gathered 500 participants, and this year, even greater interest is expected. The conference aims to develop future renewable energy projects that will contribute to realizing the vision of a green Serbia.

Prepared by Milica Radičević

Photograph: Unsplash/Andrew Hall

VIENNA ON THE PATH TO CLIMATE NEUTRALITY

Climate change indeed requires a collective effort, and we all have a role to play in reducing our impact on the environment. Vienna is one of the leading European cities in environmental protection and climate policy. The city is known for its ambitious plans for sustainable development, including energy, transportation, and waste management changes.

Vienna is focusing on transitioning to renewable energy sources, improving building energy efficiency, developing public transport and bicycle lanes, and implementing green initiatives such as urban parks and green roofs. Public enterprises play a crucial role in this process, each contributing in its way to the shared goal.

Green Energy for All

Vienna's citizens can participate in the energy transition and the expansion of renewable energy sources through the solar power plants operated by Wien Energie, thereby contributing to a sustainable energy future without the need to install their own solar panels. The model works in a simple way. Wien Energie builds and operates solar plants, and customers can participate symbolically in the project by purchasing solar packages. The price of one solar package was last set at 250 euros. Participants receive vouchers over five years for the energy produced, which they can use, for example, against their annual electricity bill settlement. The amount of compensation in vouchers depends on the amount of energy produced, and participants can monitor the production in real-time via an online dashboard. Nevertheless, a minimum annual production is guaranteed to ensure that users benefit. This offer has been very well received; 30 such power plants have been built to date, and more than 12,000 households have participated in these projects.

Photograph: Unsplash/Vienna Reyes

Vienna's citizens can participate in the energy transition and the expansion of renewable energy sources through the solar power plants operated by Wien Energie, thereby contributing to a sustainable energy future without the need to install their own solar panels

The solar power plant contingent, launched in spring 2024 on the roof of a bus garage, sold out within one day.

Energy and Climate Transition

With a bus powered by a combination of batteries and hydrogen, Vienna's public transport company, Wiener Linien, continues its commitment to new, environmentally friendly technologies. In February this year, a new competence center for electromobility was opened, and six bus lines have already fully transitioned to electric power. The plan is for nine bus lines to switch to electric power by the end of 2025. In addition to new small buses with range extender technology, hydrogen-only buses will be introduced in 2025. Ten 12-meter buses, adapted for people with disabilities and reduced mobility, will in the future be refueled with hydrogen at stations operated by Wien Energie and Wiener Netze.

To achieve climate neutrality and adapt to climate change, the Climate Department was established in Vienna. It manages strategic climate policies, the implementation of the Vienna Climate Strategy, and the Vienna Climate Budget. Jürgen Czernohorszky, a member of the Vienna City Government Council for Climate, Environment, Democracy, and Personnel, explained how they are realizing their ideas.

"The energy and climate transition concerns all of us and can only succeed through collective efforts. We

Photograph: Unsplash/Leyre

must work together to make Vienna climate-neutral and maintain its high quality of life. We are setting strategic initiatives that raise awareness of a holistic culture of a climate-neutral, resilient, and circular city. Only through joint efforts can the city achieve its ambitious climate goals. We openly address challenges, engage with citizens, and offer targeted education on climate change for both young and old. Climate change education explains cause-and-effect relationships and shows how the climate transition can succeed. Through the Vienna Climate Team, we have enabled citizens to present their ideas for a better climate in their neighborhoods and implement them with city experts. A representative group of residents in each district decides which projects will be implemented with the available financial resources. We also work closely with NGOs and local multipliers to create synergies and learn from each other," says Mr Czernohorszky.

Vienna's climate plan includes measures in areas such as mobility, energy, the circular economy, and public services. As our interviewee highlights, Vienna advocates for socially just climate protection that leaves no one behind.

"Vienna's Heating Plan for 2040, published in May, offers, for the first time, a concrete target showing how the heating supply for buildings could look without the use of fossil fuels by 2040. The plan considers

Increasing energy efficiency and transitioning to renewable energy sources are key activities, particularly when it comes to public buildings

Photographs: (left) Unsplash/Patri; (middle) Unsplash/Jacek Dylag

the entire building stock in the city, indicating where district heating could be expanded (which will be fully climate-neutral by 2040) and where other solutions will be needed. In Vienna, great importance is placed on the exemplary role of the public sector, especially in renovating public buildings," explains Mr Czernohorszky.

Energy Efficiency and Renewable Energy Sources

Increasing energy efficiency and transitioning to renewable energy sources are key activities, particularly when it comes to public buildings. This focus includes public buildings, student dormitories, and museums. In Vienna, 18 museums have received the Austrian eco-label, including four museums: Vienna Museum (Wien Museum), Kunsthaus Wien, House of Music, and the Jewish Museum Vienna. Some of the most effective measures include switching to energy-efficient lighting systems, optimizing heating and cooling systems, introducing energy management systems to monitor and optimize energy consumption, and transitioning to geothermal energy for heating and maintaining optimal temperatures.

"Examples of good practices from recent years include Kunsthaus Wien, where a transition to sustainable hydrothermal energy supply was implemented, reducing energy consumption by 75 percent compared to the previously air-conditioned area. Another successful project is the Vienna Museum, where the use of geothermal probes for heating and cooling, together with solar systems installed on the roof, allows the building to be energy-autonomous", explains our interviewee.

In addition to all the efforts to protect and improve the environment, it's also important to highlight the tremendous potential for using geothermal energy. More than 2,200 geothermal systems have already been documented. Recently, a geothermal energy atlas was introduced, providing an overview of potential locations for the use of this energy and enabling an initial assessment of its potential.

The Geothermal Energy Atlas gives an overview of potential locations for geothermal energy use and allows for an initial evaluation of potential. It serves as an informational platform for interested citizens and a tool for energy (spatial) planning. The atlas includes data on thermal performance and energy output for different operational modes (heating only or both heating and cooling) in combination with heat pumps. It is also possible to interactively determine the potential heating and cooling performance for any property. Therefore, the Geothermal Energy Atlas is an important tool for energy planning and the use of renewable energy sources in Vienna, contributing significantly to decarbonization by 2040.

Beyond Vienna's development, many of its projects serve as examples for others, attracting international attention. They emphasize that the most important aspect is leading a climate policy that includes all citizens because "climate protection concerns all of us and should not be a matter of one's wallet."

Prepared by Jasna Dragojević

Photographs: (bottom) Pixabay/Jörg Möller; (middle) Pixabay/Manekj

SOLAR ENERGY AND SUSTAINABLE BUSINESS

The importance and inevitability of the energy transition, especially in periods of energy crisis, have become clear to many in various social and economic circles – from businessmen to religious communities. This trend is also confirmed by MT-KOMEX, which has proven its commitment to renewable energy sources through numerous projects.

After constructing a 50 kW solar power plant at the Žiča monastery, MT-KOMEX confirmed the previous thesis by realizing another project at one of the most important Serbian monasteries – Manasija. In addition, it has lined up its other ventures, many of which were located in Vojvodina, where the company has already proven why it is a leader in renewable energy sources several times.

One of the significant projects of the company, MT-KOMEX, was realized in Kikinda, where an innovative solar solution was used. The project in question was implemented according to the turnkey system and is one of the indicators of the company's strategic position in the market of renewable sources.

The turnkey system includes all phases of construction and commissioning of the solar power plant, from design and delivery to assembly and final system testing. This approach allows clients like Jaffa to get a fully functional and operational solar power plant. This way of operating makes this model extremely attractive for companies striving for a fast energy transition, as it enables efficient and quick adaptation to sustainable energy practices, reducing the time and costs needed to switch to renewable energy sources.

The solar power plant on the ground, located on the premises of the Banini factory in Kikinda, is an example of the efficient use of renewable energy. High-quality Canadian

Photograph: Pixabay/Valentin J-W

solar panels of 650wp were used for construction. These panels enable maximum efficiency in converting sunlight into electricity. In addition, using a 20 kW Fronius Symo inverter contributes to optimal energy conversion and distribution. Regarding the construction on which the panels are placed, the Turkish manufacturer Kıraç Metal was chosen, which guarantees high standards in production and installation.

The planned annual production of this solar power plant is 780 MWh of electricity, which will significantly contribute to the safe and reliable supply of the plant's operations. In addition, the transition to green energy brings significant environmental benefits. It is expected that carbon dioxide emissions will be reduced by 719 tons per year. This saving in CO2 emissions not only contributes to the preservation of the environment but also helps to meet the goals of sustainable development and climate neutrality.

The solar power plant in Kikinda is being connected and will soon acquire buyer-producer status. This status will enable the investor to produce energy for his own needs and hand over excess electricity to the distribution system according to the aforementioned principle, thus contributing to his energy stability in the long run.

By implementing green projects, local communities get the opportunity to develop sustainable and environmentally friendly energy solutions, which reduce dependence on fossil fuels and improve the quality of the environment of our cities. However, projects like this still send another message: the importance of sustainable business, which is increasingly being applied in Serbia, as the company MT-KOMEX witnesses daily.

The expert team of MT-KOMEX is always ready to take on new challenges in constructing solar power plants. This is evidenced by their portfolio of over 200 built solar power plants whose total installed power exceeds 140 MW. The company's well-coordinated team is ready to respond to all client requests and build the most efficient power plant.

Prepared by Milica Vučković

In addition, the transition to green energy brings significant environmental benefits. It is expected that carbon dioxide emissions will be reduced by 719 tons per year

One of the significant projects of the company, MT-KOMEX, was realized in Kikinda, where an innovative solar solution was used

Photographs: (left) Pixabay; (right) MT-KOMEX

SERBIA'S GREEN CHALLENGES

Energy transition in Serbia is a complex process that unfolds amidst economic, political, and technological challenges. The National Integrated Energy and Climate Plan sets goals such as achieving a 33.6 percent share of renewable energy in gross final consumption by 2030. On the other hand, the Energy Development Strategy envisions that by 2050, the domestic energy sector will be as carbon-neutral as possible.

However, Ognjan Pantić from the Belgrade Open School highlights that these goals lack ambition and are not aligned with the obligations of the Paris Climate Agreement, the Green Agenda for the Western Balkans, and the Energy Community. A lack of political will, slow implementation of laws, and heavy reliance on coal, which accounts for 70 percent of Serbia's total electricity production, further complicate achieving these goals.

Environmental protection has been recognized as one of the top three most important areas in today's society

"It is necessary to accelerate the transition to renewable energy through investments in green infrastructure and the modernization of the energy grid. Increasing energy efficiency is also crucial, requiring better support programs for households and industry. Adjusting the legal framework in line with European standards is essential to facilitate a faster transition to clean energy. Progress is visible but insufficient. Serbia uses some renewable energy sources, such as hydropower and wind farm construction. Still, this process needs to be sped up, particularly by expanding the use of solar energy, especially by supporting the establishment of energy cooperatives that involve

Photograph: Unsplash/Ivan Aleksić

entire communities in energy production and democratize the coal transition process," Mr Pantić emphasizes.

Pollution and Air Quality

Air pollution is a serious problem in Serbia, which is still considered an ecological blind spot in Europe. Coal-fired power plants significantly contribute to the emission of harmful gases, negatively affecting citizens' health and the quality of the environment.

"Serbia must align its regulations with EU standards, which include stricter emission regulations, more efficient pollution monitoring, and penalties for violations. It is essential to inform citizens about the benefits of the energy transition. Public discussions, such as the current one on the Energy Development Strategy until 2030, should be more comprehensive. The trend of organizing public consultations during holiday seasons is not in line with the principles of the Aarhus Convention, which is based on transparency and public participation in environmental decision-making," says Mr Pantić. He adds that investments are needed in developing green technologies and creating new jobs in the renewable energy sector. This would simultaneously contribute to economic development and pollution reduction.

According to the latest data, air quality in Serbia has not significantly improved. Over 20 cities and agglomerations, home to more than four million people, are facing excessive pollution. The largest emitters of pollutants are heating plants and individual heating systems, while the industrial sector and coal-fired power plants also contribute to PM2.5 and PM10 particle emissions.

"The first step toward clean air for all was taken, though belatedly, at the end of 2022, when the National Air Protection Program with an Action Plan was officially adopted.

PROJECT FOR DECARBONIZING THE ENTIRE REGION

The Belgrade Open School is participating in the project "Energy Transformation and Decarbonization in the Western Balkans," helmed by the German organization GermanWatch. The project brings together organizations from the region and focuses on supporting decarbonization and energy transition. Activities include discussions with experts, study visits, and contributions to developing strategic documents, such as the Integrated National Energy and Climate Plan (INECP) and the Draft Energy Development Strategy for Serbia. A Regional Forum on the topic of energy transition is planned for next year.

Photographs: (bottom) Pixabay/Nemanja Rangelov; (top) Pixabay/Stevan Aksentijević

The vision outlined in this document is that by 2030, Serbian citizens will breathe clean air, which requires significant financial resources and ambitious measures. A key measure is the replacement of existing heating systems in households with new devices that comply with eco-design standards and heat pumps. Financial incentives need to be provided for this, and the priority cities are Kragujevac, Belgrade, Niš, Valjevo, and Užice," our interlocutor explains.

It seems that citizens are becoming increasingly aware of air pollution issues, and their pressure, combined with the contributions of the media, civil society organizations, activists, and the expert community, has led to some progress in air protection policies over the past few years. The focus is slowly shifting from air quality measurement to measures for cleaner air.

Serbia must align its regulations with EU standards, which include stricter emission regulations, more efficient pollution monitoring, and penalties for violations

In all these changes, the views and opinions of young people can be of great importance. Research conducted by the National Youth Council of Serbia and UNICEF through the U-Report survey and the WWF Adria study, The Untapped Potential of Youth in Decision-Making, indicates that young people in Serbia are concerned and interested in environmental issues. Environmental protection has been recognized as one of the top three most important areas in today's society. Although young people are aware of the problems and the poor state of the environment, they are often insufficiently informed about international agreements and just energy transition. There is frequent criticism of the education system, with young people frequently voicing dissatisfaction with the lack of focus on environmental issues in the school curriculum. Educating youth about the just energy transition should take place through communication channels familiar to them, such as social media (Instagram, TikTok, etc.), using language tailored to this target group.

CBAM at the door

The Carbon Border Adjustment Mechanism (CBAM) is an EU climate policy instrument aimed at decarbonizing imports into the EU market by treating imported products as if they were produced in the EU. CBAM requires charges for carbon dioxide and other greenhouse gas emissions for the import of products from energy-intensive industries such as iron and steel, aluminum, cement, hydrogen, and energy, regardless of whether the imports come from Europe, Asia, or another continent. The costs of these emissions will fall on importers to the EU market;

Photographs: (middle) Pixabay/Jerzy Górecki; (top) Unsplash/Piet Keitel

It is necessary to accelerate the transition to renewable energy through investments in green infrastructure and the modernization of the energy grid

EU Emissions Trading System (EU ETS). Serbia's Law on Climate Change only transposes the EU ETS provisions related to the MRV system and does not provide for the charging of greenhouse gas emissions. As a result, Serbia loses potential revenue and financial resources that could be invested in the decarbonization of the energy system. Mr Pantić emphasizes that due to the reliance on fossil fuels

however, it is reasonable to expect that they will pass this burden onto their trade partners, i.e., companies exporting to the EU.

"Serbia adopted the legal framework for establishing the Monitoring, Reporting, and Verification (MRV) system at the end of 2023, but it will not be fully functional until 2025. The first reports are expected in 2026 when CBAM begins the application of charges for embedded GHG emissions. However, according to current CBAM requirements, exporters are obliged to provide importers with reports on embedded greenhouse gas emissions during the transition phase, which indicates that Serbia was unprepared for this regulation," explains Mr Pantić.

A condition for exemption from CBAM charges, i.e., payment of embedded carbon emissions to the EU, is that the exporting country—in this case, Serbia—has established its own GHG emissions charging system, with a price equivalent to the GHG emissions price within the

and the planned opening of the new B block at the Kostolac coal-fired power plant, Serbia will face additional challenges during the full implementation of CBAM, which could lead to negative impacts on its exports and financial losses in the future.

Prepared by Milica Radičević

Photographs: (middle left) Pixabay; (middle right) Pixabay/Tom; (middle right below) Pixabay/Erich Westendarp

These two talented young researchers have developed a project that ensures completely free central heating for households, with no negative impact on the environment

YOUTH INNOVATIONS – ECO-FRIENDLY SOLAR HEATING STOVE

Young people worldwide are increasingly recognizing the importance of environmental conservation. Their passion and innovative approaches often result in creative solutions for reducing waste, preserving natural resources, and combating climate change. Through innovative projects and various ideas, they demonstrate their commitment and contribute to preserving our environment while inspiring others with their actions. Although it may sometimes seem that their efforts go unnoticed or misunderstood, the opposite often occurs—they become pioneers and drivers of significant change. A testament to how well-conceived projects can gain recognition and attract attention is the invention by Daris Filović and Hadžera Đug from Bihać, fourth-year students in the mathematics and informatics department at the Richmond Park School.

These two talented young researchers have developed a project that ensures completely free central heating for households with no negative impact on the environment. The development of their patent began in 2023, and after numerous challenges and obstacles, they completed and successfully tested their invention in just under three months.

"The idea came to us from applying transformers, which overheat due to eddy currents. We thought about how to harness this physical force to generate thermal energy. Our patent works on the principle of electromagnetic induction and eddy currents that release thermal energy. If the alternating motor is powered

Photographs: courtesy of Daris Filović and Hadžera Đug

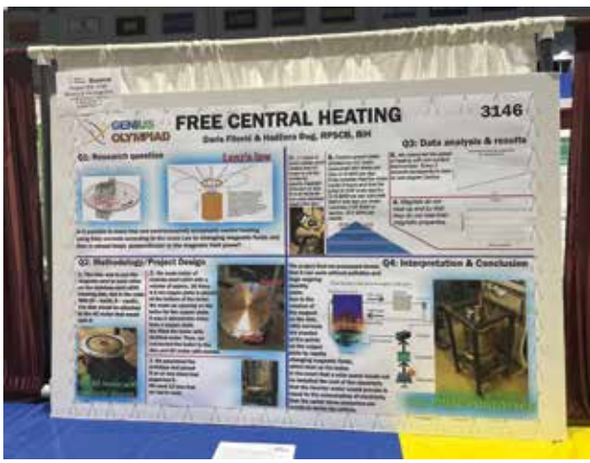
by solar energy, we get completely free heating that is eco-friendly, as it does not produce any pollution in the form of smoke or harmful gases," explain Daris and Hadžera.

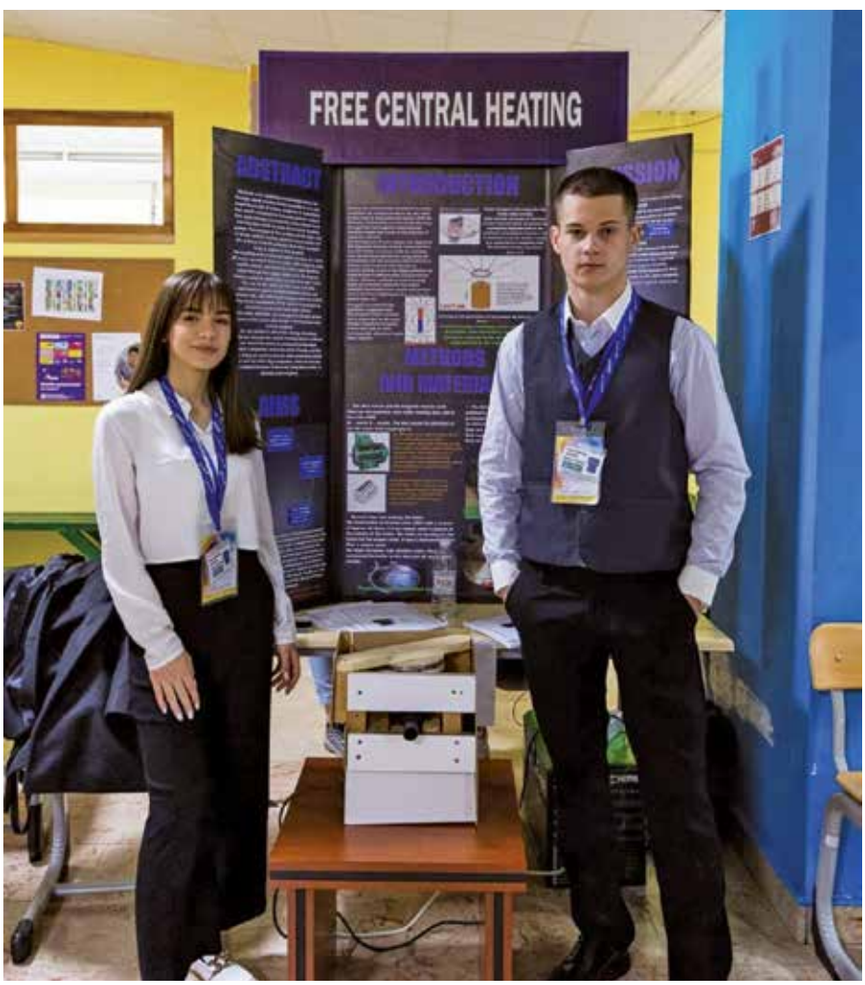
Medals at Prestigious International Competitions

They are proud that their invention has generated great interest and enthusiasm. Over the summer, these two young innovators participated in the prestigious Chinese Adolescents Science and Technology Innovation Contest (CASTIC) in Tianjin, China, where they won the gold medal. CASTIC, which has been held for 38 years, is one of the world's largest and most prestigious competitions, bringing together representatives from 20 countries with over 500 projects.

In addition, Daris and Hadžera are two-time champions of the Bosnian-Herzegovinian Science Olympiad (BOSEPO), where they won gold medals within a single year, marking a first in the history of this prestigious competition for high school students. They proudly carry the award in the field of engineering, and in December 2023, they were also recognized for their short feature film.

They also had the opportunity to present their project at the Genius Olympiad in New York, the largest global competition for high school scientific innovations. In an exceptionally tough competition, they managed to secure third place, impressing the judges of this prestigious event. This success earned them partial scholarships to RIT University, one of the most prestigious in the world.





If the alternating motor is powered by solar energy, we get completely free heating that is eco-friendly

As for the future, although they are not yet sure what's next, their joint work has secured them two scholarships at Burch University in Sarajevo. They also recently achieved significant success at the International Greenwich Olympiad, winning first place and a gold medal in the short feature film category.

Through their work and dedication, Daris and Hadžera not only inspire their peers but also show that young innovators can bring about real change in the world.

Prepared by Jasna Dragojević

CITIZEN PARTICIPATION IN THE ENERGY TRANSITION: TOWARDS A FAIR AND INCLUSIVE SOCIETY

Climate change affects everyone on the planet, but those most vulnerable are often the least responsible for causing it. These vulnerable and marginalized groups, including the economically and socially disadvantaged, usually lack the resources and capacity to cope with the consequences of climate change. This double injustice—where the most vulnerable are both the least responsible and the least equipped to adapt—can become a triple injustice if the costs of the energy transition disproportionately burden low-income groups and vulnerable communities. Therefore, it is crucial to ensure that the transition to renewable energy does not deepen existing inequalities but rather becomes an opportunity to create a fair and inclusive society where everyone benefits from sustainable development.

Focusing on justice and equality distinguishes a just transition from a simple energy transition. While the energy transition is primarily concerned with the technical and economic aspects of shifting from fossil

Photographs: (top) Unsplash/Chang Duong; (bottom) Pixabay/Lukáš Jančička

fuels to renewable energy sources, a just transition adds a social justice dimension, emphasizing the need for an inclusive and equitable process. Recognizing that different communities are unequally affected by climate change and changes in the energy sector, a just transition aims to reduce greenhouse gas emissions and ensure that no one is left behind during this process. This includes workers in the fossil fuel industry, entire regions and communities dependent on this industry, and particularly vulnerable and marginalized groups such as the poor, energy-poor, elderly, women, and ethnic minorities.

Justice in the energy transition process is primarily ensured through the fair distribution of benefits and costs (distributive justice). The benefits of transitioning to green energy—such as new jobs, improved quality of life, and environmental gains like clean air, water, healthy soil, and green spaces—must be accessible to all. In contrast, the costs of the transition should not disproportionately burden vulnerable and marginalized groups. The gradual shift to renewable energy should also be accompanied by rectifying injustices and harm caused by economic and social transformations (restorative justice). This includes a range of policies and activities aimed at supporting workers from declining industries—such as miners and employees of thermal power plants—and providing support to regions and local communities most reliant on fossil fuel exploitation. Support for workers could include financial compensation for job losses, retraining, new skills development, and educational programs to provide social security during the transition period. Affected communities should be offered economic revitalization through infrastructure investments, the development of new industries, and support for local entrepreneurship.

It is essential to recognize and respect the cultural, historical, social, and economic specificities of different communities and groups, ensuring that their identity, experiences, rights, and needs are taken into account (recognition justice). Finally, the energy transition becomes just only when the process is transparent, participatory, and inclusive (procedural justice), which is a fundamental prerequisite for achieving all other forms of justice. The decision-making process must be open and clear, allowing the public to monitor and evaluate the outcomes. All relevant actors, including vulnerable and marginalized groups, must have equal access to information and the opportunity to actively participate in decisions that directly affect them.

MAJA PUPOVAC, PhD, is a research fellow at the Institute for Philosophy and Social Theory at the University of Belgrade and a member of the Laboratory for Active Citizenship and Democratic Innovations. She completed her PhD studies in Political Science at the University of Macedonia in Thessaloniki and her Master's in Southeast European Studies at the National and Kapodistrian University of Athens. Recently, her focus has been on the just energy transition, with a particular emphasis on its socioeconomic and cultural aspects. She has worked on research and consulting tasks within several international projects, studying how individuals and local communities understand climate change and their views on the social, cultural, and identity-related consequences of the just energy transition.

Citizen Participation

Involving citizens in the process of a just energy transition offers numerous benefits for policymakers and decision-makers. First, citizen participation improves the quality of adopted policies and measures. Utilizing local knowledge and perspectives leads to decisions better suited to real circumstances and needs, increasing their effectiveness and sustainability. Citizen participation also enhances the legitimacy of the decisions made. When the transiti-

Photograph: (Pupovac) courtesy of Maja Pupovac

on results from joint work and consensus, citizens feel ownership of the process, contributing to greater support and acceptance of new policies and measures. Furthermore, transparent processes in which citizens are continuously informed and consulted build trust between the community and decision-makers, reducing the risk of conflict and resistance to changes. This is particularly important in the context of Serbia, where research shows that citizens harbor deep distrust in institutions, perceiving them, among other things, as insufficiently interested in the real needs of ordinary people. Lastly, considering that inclusiveness is one of the core principles of a just transition, involving different voices and perspectives—especially those of vulnerable and marginalized groups—ensures that the transition is truly fair and that no one is left behind.

Citizen participation is essential for local communities and groups most affected by the energy transition. Involving various groups in decision-making processes enables open communication and the exchange of opinions, contributing to better mutual understanding and solidarity, thus strengthening social cohesion and reducing conflicts within the community. Furthermore, citizen participation allows communities to better utilize local resources and potentials through joint decision-making on projects tailored to their specific needs. Participation in the transition process often opens up new opportunities for innovation and the development of local solutions that can improve energy efficiency and reduce dependence on energy imports.

Additionally, active involvement in the planning and implementing of energy projects allows citizens to acquire knowledge and skills that lead to greater self-sufficiency and the community's ability to adapt to changes. Collective adaptability and resilience are crucial for the success of long-term transitions and ensuring a sustainable future. Finally, active participation in the transition can raise awareness about the importance of environmental protection and encourage behavior change toward a more sustainable lifestyle.

Adverse socioeconomic conditions, such as poverty and unemployment, further hinder active citizen involvement in decision-making processes

Access to Information

A lack of information is one of the key barriers to more active citizen involvement in the energy transition process. As previous research in Serbia confirms, many citizens in regions dependent on fossil fuels are not sufficiently aware of what the energy transition entails, how it will affect their daily lives or the potential opportunities for their involve-

Photograph: Pixabay/Image by Martina Janochová

ment in the process. On the other hand, available information is often incomplete, inaccurate, technically complex, or unclear, which further hinders active citizen engagement, especially for those not regularly involved in political or social processes. Research in Serbia has also shown that citizens often receive information highlighting the negative aspects of the energy transition. Without adequate information, citizens remain confused or utterly unprepared for this process, while pessimistic narratives deepen feelings of apathy and make them disinterested in addressing future problems.

In addition to information, vulnerable and marginalized communities often lack the necessary resources and capacity to organize, mobilize, and effectively participate in the energy transition process. The most vulnerable groups lack financial resources, technical equipment, access to relevant expert advice, knowledge about political processes, negotiation and communication skills, and the ability to understand the often complex technical and economic aspects of the transition. Social and cultural barriers also pose significant challenges to citizen participation. In many communities, social norms and cultural practices may limit the participation of certain groups, such as women, the elderly, or minority communities. Adverse socioeconomic conditions, such as poverty and unemployment, further hinder active citizen involvement in decision-making processes. Without these resources and capacities, the most vulnerable groups are unable to adequately express their needs and concerns or influence decision-making, further deepening the existing problems of exclusion and inequality.

To overcome these challenges, informing citizens about the energy transition process proactively is essential. This includes developing a comprehensive communication strategy tailored to different target groups and covering a wide range of communication channels—from traditional media to digital platforms and social networks, as well as local public events and door-to-door campaigns. Transparent and consistent communication that focuses on the benefits of a just transition and highlights positive examples from other communities that have successfully gone through the transition and adapted to new conditions can help change the current negative narrative and encourage greater citizen interest and engagement. Educational programs and initiatives, such as training on sustainable practices, techniques to improve energy efficiency, or skills development for active participation in decision-making, are vital to strengthening the capacity of local communities. Additionally, local communities need resources to participate successfully in the energy transition, including access to financial resources, technical equipment, expert advice, and logistical support, achieved through partnerships with government, non-governmental, and private sectors.

With appropriate institutional support, including continuous information dissemination and the strengthening of resources and capacities, citizen participation can transform the energy transition from a primarily technical process into one that profoundly reflects the real needs and values of the community. In this way, the transition is ensured to be fair and inclusive, contributing to the strengthening of democratic institutions and laying a solid foundation for sustainable economic development and long-term political stability.

Photograph: Unsplash /Pedro Henrique Santos

WWF ADRIA SUPPORTS INNOVATIVE ENVIRONMENTAL PROJECTS

New projects by citizen associations and non-governmental organizations across Serbia will receive support from WWF Adria.

WWF Adria will support 15 new projects from citizen associations and non-governmental organizations throughout Serbia. Financial support of up to €18,000 per project has been allocated for 15 initiatives focused on protected species and habitats, water conservation, freshwater systems, and climate change.

This is the third and final call under the auspices of Serbia's Actions in Environment, Nature, and Climate – Safe Nature and Climate project. Through this project, WWF Adria aims to boost the capacities of local associations and organizations and support initiatives in their communities that will improve the quality of life.

Protected Species and Habitats

Ecosparek manages the protected area Ada and Slopes near Slankamen, where it is implementing a project to protect the Spotted Flycatcher, a species in decline. The project includes pasture revitalization and creating conditions for recovering this endangered species. The work will in-

Photograph: (top) Wikimedia/Mixapirgossi; (bottom) Pixabay/Haerdirolf

volve removing invasive species, cleaning silt from canals, maintaining water systems, controlling grazing, and installing protective fences.

Water Conservation and Freshwater Ecosystems

Protection of Freshwater Ecosystems in the Velika Morava Valley – Join In is a project aimed at building knowledge about freshwater ecosystems in the Pomoravlje region and assessing existing harmful impacts. The project plans to research, identify, and map the status of freshwater ecosystems (rivers, ponds, and wetlands) by assessing biodiversity and the distribution of certain wild species. It will also analyze current policies related to water management, wastewater, and gravel extraction in selected ecosystems.

Blue Oases of Southeast Serbia – UG Vision is a project that will identify endangered species and assess their condition at the sites of Krupačko Blato, Smilovska Lakes, and Dag Banjica. After identifying and analyzing pressures on biodiversity at these locations, at least one mitigation measure will be developed for each site, along with management plan recommendations.

Freshwater Protected Areas as a New Model for Conservation of Freshwater Ecosystems in Serbia – Ekomar is focused on increasing knowledge about the potential application of the Freshwater Protected Area (FPA) concept in Serbia to protect freshwater species and ecosystems. Initially, an assessment will be made of the current state of existing "special fish habitats" in Serbia, followed by a systematic analysis of current legislative solutions related to the FPA concept and an assessment of gaps. Finally, recommendations will be developed for new legislative solutions and the introduction of freshwater-protected areas.

Kraljevac Special Nature Reserve – A Best Practice Example of Reducing Negative Impacts on Freshwater Ecosystems in Vojvodina – Institute for Regional Development will be an excellent example of freshwater system conservation in the Kraljevac Special Nature Reserve. The project will map freshwater wetland ecosystems, including specific ecosystems and species. Additionally, an analysis of the presence of microplastics in wetland ecosystems will be conducted to demonstrate human

impact, and scientifically based recommendations for the protection of wetland ecosystems will be provided.

Forgotten Urban Oases – Nature's Survival – This project aims to initiate efforts to protect the former meander of the Danube, located in the Klisa neighborhood of Novi Sad. Today, the meander forms a lake with surrounding wetland areas home to numerous protected and strictly protected species. The plan includes a campaign to raise awareness about preserving this location.

Leading to Water! – UG Podunav – While working to raise awareness about the importance of freshwater ecosystems in the Upper Danube region as part of the Mura-Drava-Danube Transboundary Biosphere Reserve, this project will conduct campaigns and educational activities for the local community. Simultaneously, an assessment of external pressures on the Upper Danube will be carried out. The evaluation of ecosystem services forms the foundation of the campaign.

Public Fountains, Public Concern – Center for Policy and Strategy Creation – The project aims to improve the quality of drinking water at public fountains in Belgrade and assess public opinions on usage habits and intensity. Following the analysis,

Photographs: (bottom left) Wikipedia/Geograf208; (top) wikimedia/Mixapirgossi; (bottom right) Pixabay/Paskvi

measures will be proposed to improve the water quality at public fountains.

Climate Change

Agenda 330 – Placemaking Western Balkans – The project focuses on restoring urban nature through collaborative efforts by citizens, urban professionals, and decision-makers. Key activities include creating a collaborative process between citizens and professionals to develop sustainable solutions for urban nature revitalization, presenting these solutions, and fostering structured dialogue.

Ecological Resilience in the Era of Climate Crisis – Climate Change and Agriculture – Karlovac Vineyards Association – This project focuses on empowering and educating farmers, the local community, and project partners on practices and norms related to climate and ecological resilience in agriculture. Alongside education, research will be conducted on existing agricultural practices and systems that respect natural processes, strengthen ecological resilience to climate change, and identify gaps to develop recommendations for sustainable measures.

Together for Green Agriculture – Rudnjan Hosts Association – The primary goal of this project is to create a participatory policy process in which support measures will be proposed for farmers to use renewable energy and reduce greenhouse gas emissions within the Agricultural Policy Rural Development Support Program in Kraljevo.

Decarbonizing the Local Community through Local Resources – UG Novi Put – This project will work with local stakeholders to enhance their knowledge of climate change and the importance of using green energy to decarbonize the local community. Reducing CO2 emissions directly contributes to slowing climate change.

Save the Oak – Pedunculate Oak (Quercus robur L.) – Society for Environmental Protection Stara Planina – The project aims to create high-value ecological corridors along rivers at the foot of the Stara Planina Nature Park. Specifically, a study will be conducted to implement the natural reintroduction and introduction of the pedunculate oak in the river basins at the foot of Stara Planina. Simultaneously, efforts will be made to raise public awareness about the importance of preserving native species and increasing the population and distribution of pedunculate oaks in the area.

Raising Awareness about Climate Change and the Green Transition – Renewable Energy Sources Association of Serbia – The project focuses on public opinion research, educating women, youth, and people outside of Belgrade, and raising public awareness about this topic. It also aims to improve the regulatory framework in the area of climate change and environmental protection. Youth are the future drivers of change, women are underrepresented in the sector, and people outside of Belgrade face the consequences of climate change without even being aware.

Sustainable Agriculture for Safe Nature and Climate – UNEKOOP – By improving the capacity to support the development of sustainable viticulture and winemaking in Pomoravlje for local communities, organizations, and citizens with increased ecological, climate, and social resilience, the project aims to reduce agriculture's carbon footprint and improve organic farming to at least 25 percent by 2030. Through training, defining recommendations, and establishing dialogue between NGOs and policymakers, the project will work on raising awareness and improving the situation.

WWF

FURNITURE AND WOOD – THE DRIVING FORCE OF BOSNIA AND HERZEGOVINA'S WOOD INDUSTRY

The Furniture and Wood (Namještaj i Drvo) Wood Cluster Association from Sarajevo is a key organization that brings together around 80 companies from the wood industry and furniture manufacturing sectors, as well as research and educational institutions across Bosnia and Herzegovina. The cluster is dedicated to improving collaboration among its members, developing sustainable production, increasing exports, and educating the workforce.

The cluster actively promotes domestic products through numerous projects and initiatives, boosts market competitiveness, and implements innovations and new technologies. Their activities encompass development and innovation, promotion and marketing, networking, education, and sustainable development. Additionally, through partnerships with similar organizations in the region, the cluster successfully collaborates at the international level, further contributing to strengthening the wood industry in Bosnia and Herzegovina.

Dinko Mujkić, president of Furniture and Wood, told the Energy Portal Magazine that illegal logging poses a major problem in Bosnia and Herzegovina, with significant negative consequences for the wood sector.

"The Furniture and Wood Association emphasizes the importance of passing a Forest Law, which would regulate this area and enable more efficient control. We believe that curbing illegal activities requires enhanced inspections, introducing digital forest monitoring systems, raising public awareness, and stronger regional and international cooperation," Mr Mujkić adds.

On the other hand, the cluster members believe that the government's approach to the wood sector in Bosnia and Herzegovina is not at a satisfactory level. Issues such as insufficient law enforcement, lack of

Photographs: courtesy of Dinko Mujkić

political will, and corruption further complicate the situation, threatening the sustainable development of this sector.

The Importance of Trade Fairs for the Wood Industry in Bosnia and Herzegovina

Participation in trade fairs is of exceptional importance for furniture manufacturers from Bosnia and Herzegovina. Mr Mujkić highlights that trade fairs provide an opportunity to increase visibility and recognition in the global market, network with key industry players, keep up with the latest trends and innovations and expand markets and exports. Additionally, direct contact with customers at fairs allows manufacturers to receive feedback and adjust their products to market needs.

He particularly highlights the importance of collective appearances at fairs such as MOW in Germany, IMM Cologne, Salone del Mobile in Milan, and others, as this helps strengthen Bosnia and Herzegovina's image as a country with a high-quality wood industry.

Decline in Exports of Bosnia and Herzegovina's Wood Industry

The wood industry of Bosnia and Herzegovina has faced a decline in exports in recent years, which significantly affects this sector. The value of wood industry exports in 2023 amounted to 1,592,465,387 BAM, a decrease of 12.3 percent compared to the previous year. The decline in exports mainly affects the furniture sector, which accounted for 43 percent of total exports last year, with a 3.9 percent decrease compared to 2022.

This trend negatively impacts wood processors, reducing revenues and making business operations more difficult. Our source highlights the need for government support to increase exports by strengthening legal regulations and improving the business climate in the country.

Hum (Balkan) Investment Energy Summit Conference

The regional Hum (Balkan) Investment Energy Summit, scheduled for September 10 in Visoko, will bring together key stakeholders from the fields of energy, investment, and sustainable development. Attendees can expect panel discussions on topics such as investments in the energy sector, sustainable development, and technological innovation. The conference will also provide opportunities for networking with company representatives, investors, and other key players, potentially leading to new business opportunities.

"There is significant interest in the event, and we expect attendance from numerous government representatives, companies, and international organizations. I believe this event will contribute to a better understanding and create new opportunities for investment and collaboration in the region," adds Mr Mujkić.

This event is organized by the Wood Cluster Business Association of Bosnia and Herzegovina Furniture and Wood and the EventExpo – KiK BiH Business Club in partnership with the Bosnia and Herzegovina External Trade Chamber, the Federation of Bosnia and Herzegovgina Chamber of Commerce, the Bosnian Pyramid of the Sun Archaeological Park with Osmanagić, PhD, Diaspora Invest, the Academic Community, the WMTA Vocational Education Institution in Banja Luka, the Ministry of Energy of the Bosnia and Herzegovina Federation, the Ministry of Finance of Bosnia and Herzegovina, the Foreign Investors Council, FIPA (the Foreign Investment Promotion Agency in Bosnia and Herzegovina), the Union of Local Communities of the Western Balkans, Development Agencies, Business Associations and Employers in Bosnia and Herzegovina, investment funds, commercial and development banks, companies, media outlets, and others.

Prepared by Milica Radičević

HUNGARY'S GREEN PROGRESS

In recent years, countries around the world have set ambitious environmental goals. For some, these goals pose challenges that are not easily overcome, while others face failure. However, Hungary stands out as a country taking ecology seriously, prioritizing the development of solar energy, energy storage, and electric vehicles. Following its success in 2023, Hungary continues its intense efforts to advance environmental progress in 2024.

Hungary has exceeded its initial goals outlined in its National Energy and Climate Plan (NECP), which aims to reach 6.5 GW of solar energy capacity by 2030. This goal was already achieved by 2024, prompting a revision that increased the target to 12 GW. Last year alone, Hungary's solar capacity grew by a record 1,632 MW.

Investments in Renewable Energy

At the beginning of 2024, Hungary expanded its Napenergia Plusz program, offering subsidies of five million forints (about 13,000 euros) for the installation of solar panels and energy storage systems. The program provided a budget of 75 billion forints (about 197 million euros) to help households reduce electricity costs and become more energy-inde pendent. In the first month of the year, more than 400 contractors were registered, and over 21,500 households applied for subsidies. Due to high demand, the program's budget was increased by 30 billion forints (about 79 million euros), enabling subsidies for more than 25,000 households.

According to the official website of the Hungarian Ministry of Energy, data from the transmission system operator MAVIR shows that, by July 2024, Hungary had

Photograph: Unsplash/Andrii Bondarenko

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installed 6,712 MW of solar power capacity. Of this total, the largest portion—3,678 MW—came from industrial facilities, meaning that nearly 90 percent of systems with capacities greater than 50 kW were operational during peak energy demand periods. Additionally, MAVIR noted that if this growth trend continues, Hungary's solar energy capacity could increase by more than 1 GW in 2024, consistent with the growth seen in the past two years. Regarding households, around 270,000 solar systems are currently in operation, three-quarters of which are rooftop installations, marking a thirtyfold increase in the last decade.

Due to the significant rise in solar capacity and the growing use of other renewable energy sources, the Hungarian government has launched several important programs

Photograph: Unsplash/Daniele La Rosa Messina

to support the development of this sector. These include initiatives aimed at improving energy storage infrastructure, which ensures a stable energy supply and the integration of renewable sources into the power grid.

The first program was launched in January 2024 with a budget of 62 billion forints (163 million euros). The goal was to help businesses build energy storage capacities in the industrial sector, aiming to increase storage capacity twentyfold from the current 20 MW by the summer of 2026. According to the Ministry of Energy, current capacities could be increased fiftyfold by 2030.

In June, Zsófia Koncz, State Secretary at the Ministry of Energy, stated that 2024 is crucial for modernizing Hungary's electricity grid. The government supported these investments with 160 billion forints (around 421 million euros), including constructing new substations and expanding existing transmission lines. These measures are important for improving the supply security of Budapest and Eastern Hungary.

Nuclear Energy – Key to the Future

Hungary also emphasizes the importance of nuclear energy, with the Paks 1 and Paks 2 power plants expected to produce half of the country's energy needs by the 2030s. With the full operation of the total solar and nuclear energy capacity, the country can fully supply itself with technologies that produce zero carbon emissions. However, due to unstable weather conditions, which affect the full capacity of solar energy, nuclear energy remains crucial for Hungary. This was confirmed by State Secretary Zsófia Koncz, who stated that extending the operational life of Paks 1 and completing the construction of Paks 2 is essential.

Another energy source that Hungary is focusing on is geothermal energy. For years, the country has ranked among the top five in Europe for direct use of geothermal energy, and there are plans for a significant increase in its use by 2030. The current usage of around 6.4 petajoules is expected to increase to 12–13 petajoules, raising the share

DEVELOPMENT OF E-MOBILITY

Official data shows that the number of registered fully electric vehicles in Hungary is growing, supported by state subsidies. In February 2024, a grant program was launched for the purchase of electric vehicles, with a budget of 30 billion forints (around 79 million euros). Applications are open until March 2025, and a record number of electric vehicles were registered in the program's first month. Additionally, a new program has been announced with a budget of 28 billion forints (around 74 million euros) to install over one hundred new public e-chargers across the country.

Photograph: Unsplash/Maxim Hopman

Another energy source that Hungary is focusing on is geothermal energy. For years, the country has ranked among the top five in Europe for direct use of geothermal energy, and there are plans for a significant increase in its use by 2030

of geothermal energy in heat production from 6.5 percent to 25–30 percent. The state will provide 165 billion forints (about 434 million euros) for geothermal investments, including 34 billion forints (around 89 million euros) to reduce geological and financial risks.

The development of this sector has recently been supported by a new, flexible permit system, the establishment of the Hungarian Geothermal Cluster, and the continuation of the national geothermal research program. By 2035, new applications of geothermal energy could replace between one and 1.2 billion cubic meters of natural gas, further reducing dependence on imports. Regarding natural gas consumption, Hungary is also recording excellent results. At the end of March this year, the second phase of the mandatory 15 percent reduction in natural gas consumption for European Union member states was completed, compared to the average consumption over the previous five years. Hungary exceeded this requirement, reducing its consumption by 20 percent. Between 2017 and 2022, the average gas consumption in the country exceeded 10 billion cubic meters, while between April 2023 and March 2024, consumption fell to nearly eight billion cubic meters.

Prepared by Katarina Vuinac

Photograph: Unsplash/Sebastiano Corti

HOW PLANTS CLEAN THE ENVIRONMENT FROM HARMFUL SUBSTANCES

The story of per- and polyfluoroalkyl substances (PFAS) begins with something not uncommon in science but requires a keen and careful eye. Namely, while working on the synthesis of new compounds in the 1940s, chemists at the DuPont Company did not achieve what they had planned, but they noticed that some compounds exhibited repellence to both water and oil. Humanity was introduced to a new patent commercially known as Teflon, a compound that nature had neither synthesized before nor since. Over the years, thousands of these compounds have found applications in numerous industries – for impregnating rain-resistant jackets and shoes, as an additive in firefighting foams, as coatings on the inner sides of fresh food packaging, in cosmetics, medicine, the automotive industry, and telecommunications devices.

Harmful Effects

However, PFAS contain one of the strongest covalent bonds in nature (carbon-fluorine), making them highly resistant to biodegradation, and their removal from the environment presents a significant challenge. By the end of the last century, scientists had detected the presence of PFAS compounds in water, plants, food, blood, and breast milk. Pandora's box was opened, and in recent years, they have been found in water, soil, and numerous organisms. Their presence near factories that produced them is not surprising, but PFAS have also been detected in very remote areas, such as the Arctic and Antarctica. Furthermore, some studies suggest that exposure to PFAS compounds is associated with harmful health effects, including a reduced immune system response, elevated cholesterol levels, thyroid hormone disruption, reduced birth weight, and more.

Photographs: Science Fund of the Republic of Serbia

By the end of the last century, scientists had detected the presence of PFAS compounds in water, plants, food, blood, and breast milk

Due to all the aforementioned, the use of these compounds is increasingly restricted, and maximum allowable concentrations in food and water are being regulated. PFAS compounds are a global challenge, highlighted by the Hollywood film Dark Waters, which depicts the ongoing battle of lawyer Robert Bilott against the DuPont Company.

Given the significant concern surrounding this environmental issue, a group of scientists from Serbia has gathered to develop innovative strategies to address the presence of PFAS compounds in the environment. The PhytoPFAS project team, funded by the Science Fund of the Republic of Serbia, is multidisciplinary and consists of fifteen researchers from the fields of chemical, biochemical, and physicochemical sciences from four scientific and educational institutions of the University of Belgrade – the Faculty of Chemistry, the Institute of Chemistry, Technology, and Metallurgy (ICTM), the Faculty of Physical Chemistry, and the Faculty of Medicine.

Application of New Technology

The main goal of the PhytoPFAS project, funded under the Green Program for Science and Industry Cooperation, is to develop the use of plants (phytoremediation) for cleaning polluted environments and establishing a solid foundation for applying this technology in collaboration with industry. The PhytoPFAS team will explore the possibility of PFAS compound uptake using different plants in soil and hydroponics.

After selecting the most efficient species, the plants will be tested at both the laboratory level and pilot scales. The next step involves the commercial application of the developed technology. Phytoremediation can be used to remediate existing pollution and prevent new contamination. The primary beneficiaries will be the broader population and industry, as the application of phytoremediation will contribute to a cleaner and healthier environment, more efficient use of natural resources, and reduced waste.

Researchers from the Faculty of Chemistry and the Institute of Chemistry, Technology, and Metallurgy at the University of Belgrade also coordinate another significant project related to PFAS compounds, PFAStwin, funded by the European Executive Agency for Research. This project is strengthening Serbia's capacity for PFAS compound analysis and bioremediation.

The PhytoPFAS Project Team

SUSTAINABLE BANKING FOR A SECURE FUTURE

For over two decades, ProCredit Bank has been working diligently to reduce its direct and indirect impact on the environment. Their commitment to achieving zero carbon emissions is reflected in their investments in renewable energy sources and the incentives they offer clients to do the same. Miloš Stepandić, Head of Business at ProCredit Bank, discusses how they are achieving their goals and their plans for the future.

Q: What does sustainable banking mean for ProCredit Bank?

A: Our focus has been on sustainable banking from the beginning. This means that we have adapted all our work processes to sustainable practices: from online banking to strictly controlled energy consumption and other resources in our daily operations, to regular measurement of carbon emissions, the use of a low-emission vehicle fleet, and the development of a network of chargers for electric vehicles. We also conduct energy audits of the bank's office buildings to find solutions for optimal energy management and increase the energy efficiency of our operations.

Considering that 90 percent of our portfolio consists of micro, small, and medium-sized enterprises, entrepreneurs, and farmers, it is clear how much responsibility and opportunity we have in promoting sustainability. Individually, these factors may not seem like key elements needed for an ecological transition, but collectively, they can have a significant environmental impact due to the diversity of their activities. This diversity includes different industries, production processes, and resource usage, meaning a comprehensive approach to sustainability can reduce the overall environmental footprint. Our business model is focused on providing financial services to innovative companies with a high degree of digitalization. Through collective efforts to reduce resource consumption and transition to sustainable practices, micro, small, and medium-sized enterprises can significantly contribute to global environmental protection and sustainable development goals.

Photographs: ProCredit Bank

Q: How can sustainable banking be improved?

A: There are many opportunities for improvement. So far, we have successfully allocated over 400 million euros in green investments, contributing to the modernization of infrastructure through the use of new technologies for the production, storage, and distribution of energy from renewable sources. The energy transition is not only a social and technological challenge but also an economic one, where the role of financial institutions becomes crucial.

Q: How do you analyze clients during the financing approval process? How do you encourage clients to operate more sustainably?

A: Our impact starts with a thorough financial analysis. An essential contribution in the financing segment comes from the support of our colleagues in the Department for Sustainable Development, and we are the first bank in Serbia to establish a dedicated department for energy efficiency. We carefully analyze all aspects of our client's operations, including the location of their activities, their impact on natural resources, the materials used, and the processes and equipment involved in their production. Through well-established procedures, we jointly identify and classify the impact of companies' activities on the environment and workplace. These procedures help us establish standard methods for identifying and assessing environmental impacts and potential risks.

ProCredit Bank has financed over 100 solar power plants for personal or commercial purposes

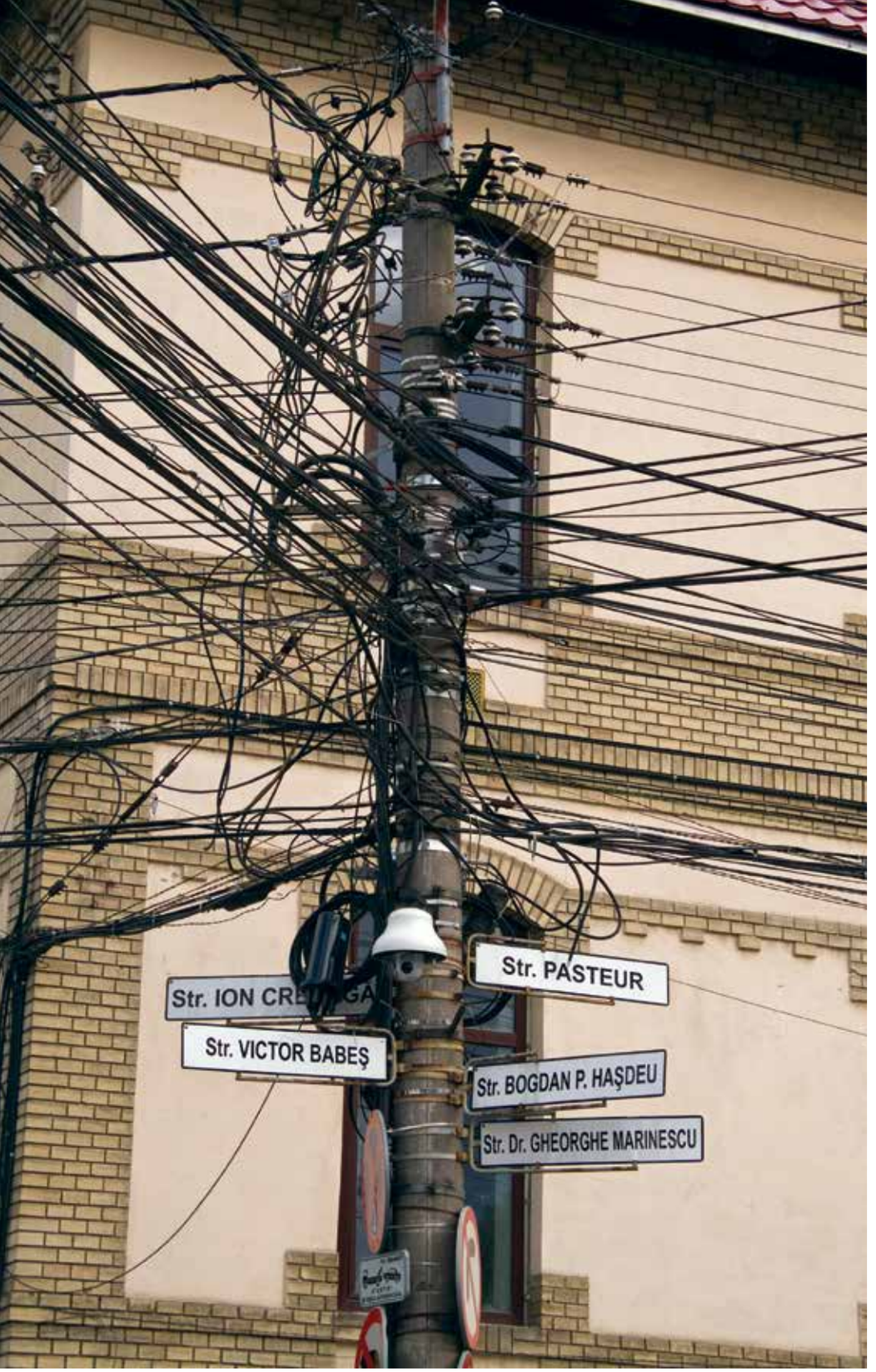
Miloš Stepandić

Head of Business at ProCredit Bank

If we finance businesses engaged in environmentally risky activities, we explore whether more sustainable alternatives are available in the market that could replace current materials and processes and offer solutions to improve those processes. When deciding on loan approvals, we carefully assess whether the client's activities meet the criteria outlined in ProCredit Bank's Exclusion List of Activities. The ultimate goal is to replace harmful practices with better options and provide financial support to those striving for progress and recognizing the potential and importance of sustainable operations.

Q: How do you support the green transition?

A: ProCredit Bank has financed over 100 solar power plants for personal or commercial purposes. Renewable energy sources are a key part of the green transition we want to support, but other types of investments should not be overlooked, as they are equally important. With this in mind, about 60 percent of our green portfolio is dedicated to energy efficiency investments. We believe that we can only transition to a more sustainable model and improve our economy through a holistic approach. ProCredit Bank



THE FUTURE OF GREEN ENERGY IN ROMANIA

Romania is among the countries with a diverse and balanced energy mix, with a strong reliance on hydropower, efficient nuclear reactors, and wind farms, while coal and natural gas are also present in the energy composition. As a member of the European Union, Romania prioritizes climate neutrality, energy stability, and environmental preservation.

Environmental protection, one of the main concerns of the EU, is often inseparable from energy issues. Romania can also take pride in this area, as it is interwoven with vast protected areas and the longest sections of the Carpathian Mountains, making the preservation of its natural resources a significant task.

As much as 30,000 hectares are under UNESCO protection, while the country boasts over 70,000 hectares of old-growth forests. The Danube is an indispensable element in the story of the country's natural wealth and developed energy sector, as it powers local hydroelectric plants, with more than one-third of the river situated within Romanian territory, stretching over 1,000 kilometers.

Regarding nuclear energy, our interlocutor, Sebastian Burduja, Romania's Minister of Energy, shared more about Romania's energy plans, including nuclear energy. This is of particular interest as Serbia is gradually turning its attention to nuclear, and examining how everything is progressing, especially in neighboring countries.

Q: Can you present Romania's energy mix? How significant are coal and gas in Romania's energy sector, and are there plans to reduce their usage?

A: Romania's current energy mix relies on a diverse range of resources, with a focus on renewable energy sources, natural gas in combination with hydrogen, and nuclear energy. Romania is on the path to decarbonizing its economy, aiming to achieve

Photograph: Pixabay/Erdelyisanyi

The National Recovery and Resilience Plan foresees investments in new capacities for producing 950 MW of electricity from renewable sources, primarily solar and wind energy, with an available budget of 460 million euros

SEBASTIAN BURDUJA completed his undergraduate studies at Stanford University, where he graduated with special recognition. He then earned two master's degrees at Harvard: an MBA (Master of Business Administration) from Harvard Business School and an MPP (Master of Public Policy) from the Harvard Kennedy School of Government. He also obtained a PhD in economics from the Bucharest Academy of Economic Studies, where he completed his doctorate with top honors. Burduja worked as a regional development expert at the World Bank in Washington, D.C., from 2012 to 2016. Last year, he assumed the position of Minister of Energy in the Romanian Government.

key energy and climate goals by 2030, as outlined in the National Energy and Climate Plan (NECP) and the National Recovery and Resilience Plan (NRRP). Therefore, we are working intensively on the electrification process, dismantling outdated coal-fired power plants, increasing the share of energy from renewable sources, and improving energy efficiency.

To support these plans, Romania has taken several concrete steps. First and foremost, the gradual phase-out of coal by 2032 plays a crucial role in achieving climate goals, accompanied by the parallel development of low-carbon energy production capacities and, of course, the necessary

Photographs: Pixabay; (Burduja) courtesy of Sebastian Burduja

supporting infrastructure. The National Recovery and Resilience Plan foresees investments in new production capacities amounting to 950 MW of electricity from renewable sources, primarily solar and wind energy, with an available budget of 460 million euros. In addition, through the Modernization Fund, the construction of an additional 10 GW of wind and solar energy is planned by the end of 2030.

To facilitate private investments in renewable energy sources, our Ministry of Energy has introduced Contracts for Difference (CfD), which will ensure long-term predictable revenues for new energy producers, while simultaneously contributing to reducing market prices by increasing the amount of energy in circulation. We can say that CfDs are a tool used in this case to encourage investments in renewable energy sources. They allow renewable energy producers to receive a fixed price for the electricity they generate, independent of current market price fluctuations. In this way, the producer has revenue stability, which makes it easier for them to plan ahead and invest in new projects.

Q: What major renewable energy projects are planned for the upcoming period?

A: Romania aims to increase the share of renewable energy in its energy mix, with the goal of having at least 38.3 percent of total energy consumption come from renewable sources by 2030.

One of Romania's most ambitious plans is to become, by the end of this decade, the first country on the Black Sea with offshore wind energy production facilities. This is a significant project that can harness the sea's potential which has not been utilized so far.

The Cernavoda Nuclear Power Plant, with its two units, provides continuous and clean energy to Romania, meeting about 20 percent of its energy needs

The country's energy priorities are focused on new investments that will increase the contribution of renewable energy sources to the energy mix, including harnessing the renewable energy potential of the Black Sea, large-scale electricity storage, and the use of hydrogen.

Q: When did Romania start using nuclear energy, and can you provide an overview of its current state?

A: Last year, at COP28, more than 20 countries across four continents signed a joint declaration aimed at tripling global nuclear energy production by 2050. In the European Union, nuclear energy currently covers approximately one-quarter of total electricity production, with around 100 operational reactors. Additionally, more than 35 new reactors are either planned or already under construction. The Net Zero Industrial Act in the European Union also recognizes the importance of nuclear energy in reducing emissions and, therefore, facilitates the implementation of nuclear projects through financial mechanisms that reduce risk and enable stable revenues, such as Contracts for Difference (CfD) or Power Purchase Agreements (PPA). Nuclear energy and renewable energy sources are positioned quite evenly when discussing climate goals for 2040.

As for Romania, it represents a unique example in Europe, as in the 1970s it decided to develop a nuclear program based on Western technology, making it the only country from the former Soviet bloc to choose CANDU technology (Canadian Deuterium Uranium). The Cernavoda Nuclear Power Plant, with its two units, provides continuous and clean energy to Romania, meeting about 20 percent of its energy needs. These are among the most efficient reactors in the world, which is why Romania

Photographs: (top) Wikipedia; (middle) Pixabay/HubertPhotographer

continues to develop its nuclear capacity through the planned construction of the third and fourth units at the Cernavoda site, with their commissioning expected by 2031.

Furthermore, Romania is committed to nuclear innovation through the development of small modular reactors (SMR), particularly in regions facing the gradual phase-out of coal. SMR technology offers numerous advantages, including lower costs, shorter construction timelines, and, ultimately, greater efficiency. Nuclear waste management remains a key issue in the nuclear program. Romania, like other countries with developed nuclear infrastructure, directs significant funds and expertise towards the safe disposal of nuclear waste, which is why international cooperation in this field is essential for the sustainability of nuclear energy in the future.

Q: What is the current state of electrification in Romania, how attractive are electric vehicles to citizens, and are there any infrastructure challenges?

A: Electrification has become synonymous with modernization. With the gradual phase-out of coal by 2030 in most countries, there is a need to compensate for the lost electricity generation. It is expected that global energy consumption will continue to rise, particularly due to increasing electrification in the transportation and industrial sectors.

By 2050, it is estimated that 65 percent of passenger cars in the country will be electric vehicles, 20 percent are expected to use hydrogen, while the remaining share will consist of plug-in hybrids (around 13 percent) and gasoline-powered vehicles (around 2 percent).

According to the revised National Energy and Climate Plan, Romania has ambitious goals regarding the reduction of greenhouse gas emissions, especially in the transportation sector. Among other things, the country aims to limit the increase in greenhouse gas emissions in the transportation sector by the end of this decade so that this increase does not exceed 40 percent compared to 1990 levels.

Although Romania has made significant progress in this area, there are challenges in the development of supporting infrastructure, similar to other countries. The development of a charging network, as well as the adaptation of existing power systems to new demands, are key tasks in the coming period.

Q: How does the Romanian public perceive the transition to renewable energy sources?

A: We are aware of the social and economic challenges that come with the transition from coal to cleaner energy sources. This is why the transition is focused on the principle of fairness, ensuring that no community or worker is left behind.

The state is investing in renewable energy projects and creating new jobs in the green economy while also supporting workers through retraining and upskilling programs. Through the previously mentioned National Recovery and Resilience Plan, as well as other measures, the state provides subsidies and incentives to citizens and businesses to facilitate the transition to renewable energy sources.

Citizens and businesses generally support this transition, but challenges remain in terms of awareness, accessibility of subsidies, and trust in the long-term benefits of these changes.

Interview by Milica Vučković

Photographs: (middle) Pixabay; (bottom) Pixabay/Pisoi2002

ARTIFICIAL LEATHER MADE FROM BEER IS CHANGING THE FASHION WORLD

"What can be made from Beer Skin is limited only by the creativity of the person using it"

In a world where fashion changes faster than ever, the pressure on natural resources and the environment is increasing. The fashion industry, known for its dynamism and innovation, is among the largest polluters globally. For this reason, sustainable fashion is becoming not just a trend but a necessity, and one significant achievement in this field comes from the laboratory of the innovative company Sabant.

Its founders, Tamara Vučetić and Andrej Marić from Zagreb, came up with the idea to create a high-quality material called Beer Skin™ from the leftover barley malt waste produced by the beer industry.

Tamara Vučetić, who completed her master's studies in fashion entrepreneurship in Amsterdam, reveals that Beer Skin is a versatile material with characteristics that vary depending on what you want to make from it.

"If it's a material intended for clothing, we're talking about a stretchy, thin, lightweight material. However, if someone wants to make a bag or a wallet, we're talking about thicker and more rigid materials. What can be made from Beer Skin is limited only by the creativity of the person using it," she explains.

She also reflected on the beginnings of this unusual business venture, emphasizing that when she was running her fashion brand, she wanted to use plant-based materials.

Photographs: @got.linopoliss

Still, they didn't meet the necessary quality standards or were not widely available at the time.

"This frustration led to the idea of creating my own plant-based material. The idea of using beer, specifically spent grain, came partly by accident, as my business partner Andrej and I lived across from the Zagreb Brewery. Not to mention, the company itself started, of course, with beer," Vučetić jokes, adding that they couldn't resist the opportunity to say, "My shoes are made from beer!"

Regarding the material production process, Tamara explains that it all begins by collecting spent barley malt from the breweries with which Sabant collaborates. This valuable resource, primarily discarded as waste, is collected before fermentation begins, then dried and ground. Grinding is crucial because it achieves the specific granulation needed to integrate the plant matter into the formulas used to create Beer Skin. Beer Skin is produced in collaboration with Sabant's Italian partners, following a formulation developed by young entrepreneurs with the help of experts from the Faculty of Science in Zagreb.

This method enriches the market with an eco-friendly and sustainable alternative to artificial leather, often produced using toxic materials and plastics.

"Our goal has always been for plant-based leather to replace the standard available artificial materials, like those marketed as vegan leather, and to reduce the amount of plastic used in the production of these materials. By transitioning from standard vegan leather to plant-based leather, we could reduce the amount of plastic produced by several million tons annually," highlights Andrej Marić.

Beer Skin Takes the World by Storm: Growing Interest in Beer Leather

An innovative and sustainable high-quality material like Beer Skin couldn't go unnoticed. According to our interviewee, once word about this material spread and it reached the hands of numerous creatives, more and more people began to see Beer Skin as a platform to tell their own story and connect with their audience.

"Beer Skin brings that emotional element that we can all relate to—whether it's the feeling of Friday night, a cold beer after a long day at work, or, in these summer months, a beer in the shade by the sea. Our clients are individual designers and companies looking to make a leap into the world of innovative materials. They want a reliable producer of high-quality materials and have recognized Beer Skin as a storytelling platform for their brand," says Marić.

There's no doubt that a bright future lies ahead for Sabant, and our interviewees emphasize that their current focus is on product commercialization and developing new lines of Beer Skin. In the coming months, the company anticipates numerous exciting collaborations, and Marić reveals they are hoping for their first partnerships in Serbia soon.

Thanks to their bold vision and innovative approach, Tamara and Andrej have managed to turn waste from the beer industry into a valuable resource, creating a material that combines ecology, sustainability, and quality. Beer Skin is not just a new type of artificial leather but a symbol of entrepreneurial spirit and creativity that pushes the boundaries of what's possible. With plans for further expansion and collaborations on a global scale, this young company from Zagreb continues to inspire and demonstrate that a sustainable future can be just as exciting and innovative as the present.

Prepared by Milena Maglovski

KEY PLANS FOR NORTH MACEDONIA'S ENERGY FUTURE

North Macedonia is on the verge of significant changes in its energy sector, laying the foundation for energy independence. At a time when global energy challenges are increasingly present, the country faces the need to modernize its infrastructure and shift its focus towards renewable energy sources. To learn more about the plans and goals during this pivotal moment, we spoke with Sanja Božinovska, the Minister of Energy, Mining, and Mineral Resources of North Macedonia, who shared with us the vision, strategy, and concrete projects that will shape the country's energy future.

Q: You recently took over the Energy, Mining, and Mineral Resources portfolio in North Macedonia. What is your main goal for the next four years?

A: Our primary goal is to strengthen domestic production capacities through serious multi-year and long-term investments in energy infrastructure and facilities that will

Photographs: Unsplash/Darko Cvetanoski

There is a real challenge in building new facilities, especially solar power plants, but before we start issuing permits and licenses, we need to address the issue of energy storage, as it is already causing problems in the system

SANJA BOŽINOVSKA graduated in Business Administration and Political Science from Anglo-American University in Prague. She later completed her master's in International Business at the University of Groningen in the Netherlands, along with additional programs in the Netherlands and at Harvard University. She has worked as an independent energy consultant, focusing on energy projects, investments, PPAs (Power Purchase Agreements) for solar power plants, cross-border energy trade, and renewable energy projects.

guarantee the country's energy stability and independence and ensure domestic energy production as a guarantee of the competitiveness of the Macedonian economy. We plan to implement capital investments, one of the new government's priorities. The energy sector in North Macedonia has been neglected for a long time. Still, energy will have a special place for this government, and we will work diligently to achieve the country's energy independence. In addition to building new energy production facilities, we plan to complete the process of energy interconnection with neighboring countries.

Q: How much renewable energy capacity does North Macedonia currently have, and where does the country's greatest potential lie?

A: The green transition has begun, and a strong push for the construction of renewable energy (RES) capacity occurred at the start of the energy crisis. We ended last year with an installed capacity of 1,311 MW from renewable sources, most of which are hydropower plants – 720 MW. Of this, 587 MW comes from large hydropower plants and 133 MW from small ones. Right behind them are photovoltaic (solar) power plants, which have seen a real boom, and by the end of 2023, we had a capacity of 506 MW. Last year, we produced 2,173 GWh of electricity from renewable sources, which accounted for 33 percent of total production. Building new facilities, especially solar power plants, is a real challenge. Still, before we start issuing permits and licenses, we need to address the issue of energy storage, as it is already causing problems in the system.

However, I want to emphasize that even though we have intensive development of RES capacity, all of it is owned by private companies that sell the

Photographs: Pixabay/Dimitris Vetsikas; (Božinovska) courtesy of Sanja Božinovske

produced energy to traders at market prices, meaning North Macedonia has no planned purchase of this electricity. A tiny portion of the electricity, produced from capacities operating under feed-in tariffs, is owned by the state but at very high prices, which is why this concept is being abandoned. Therefore, as a government, we aim to find a mechanism to purchase energy produced by private solar power plants and wind farms. Additionally, our goal will be to build state-owned renewable energy (RES) capacities because only then can we ensure energy stability. Of course, it is essential to be realistic and say that the energy transition is a process that takes decades, requires systematic investment, and must take into account the country's current situation.

Q: What is your main plan for increasing renewable energy (RES) capacity? At this point, is it more important for the country to invest in RES plants or to modernize the electricity distribution network?

A: I would say both can be developed simultaneously. In the long term, there is a need to modernize the distribution network, which has seen very little work in recent years, leading to frequent outages and issues. The network can no longer balance solar and wind energy effectively. I must point out that over 1,000 megawatts of renewable energy are currently not operational due to the weak capacity of the network in the southern region. Therefore, the government has already signed a loan agreement with the EBRD to construct a new substation near Gevgelija and reconstruct a 110-kilovolt transmission line. As a quick solution to the problem, we plan to introduce a requirement for installing batteries to store the electricity produced while simultaneously working on modernizing the network. So, issuing permits to construct new capacity must be part of a holistic approach.

We also believe it's crucial to balance renewable energy sources. In addition to photovoltaic plants, we should have as many capacities as possible to generate electricity from wind, water, biomass, and biogas, as each type of renewable energy has different production qualities and quantities depending on the time of day and the season. That's why, in the first days of the new government's mandate, we announced the construction of a new wind farm with a capacity of up to 400 MW, featuring more than 50 wind turbines. This will be the largest wind farm in the Western Balkans and will provide clean electricity for over 100,000 households.

Q: What are the most important energy projects in North Macedonia right now?

Photograph: Unsplash/Petar Avramoski

A: Given that the energy sector has been neglected for years, many projects were started but are still unfinished despite their crucial importance. I would mention the gas interconnector with Greece, which is delayed but very important for the country as it ensures a reliable supply of natural gas. The construction of the electricity interconnector with Albania is also behind schedule. This project is essential for improving and making energy more accessible to households and businesses in the country by normalizing voltage levels, stabilizing load flows and frequency fluctuations, and reducing technical losses in the overall transmission system. The completion of the gas pipeline network has also been delayed. Thirteen years after the start of gasification, the construction of the main gas pipelines is still not fully completed. Some sections have been built but are not yet in use, and some sections haven't been built but for which materials and spare parts have been purchased. And it seems as though no one cares.

Funds for these projects have been secured from loans by international financial institutions and from the budget, yet all deadlines for construction and commissioning have been missed. Therefore, we will have to intensify the work because these are strategic energy capacities of inestimable importance for the country, and they are also crucial for securing funds for future projects. As it stands, we are becoming an unreliable country in the eyes of foreign banks and investors. Additionally, our goal is to build two gas cogeneration plants, and we have plans to construct a wind farm in Bogdanci, Miravci, as well as another 200 MW project. With these domestic capacities, the country will have a quality energy system.

Q: Do you intend to involve citizens and businesses further in the energy transition process, and if so, how?

A: Absolutely, this is part of our program. The focus is on energy efficiency and the installation of solar panels on the roofs of homes, kindergartens, schools, and other public buildings. A planned program for grants and favorable loans for 150,000 households also exists. The support will cover the installation of new energy-efficient facades, windows, and doors, as well as subsidies for citizens, covering up to 50 percent of the cost for the purchase and installation of energy-efficient equipment, such as solar collectors, heat pumps, and photovoltaic power plants. Households will have the opportunity to sell excess electricity generated under better conditions with a change in the current regulations. We are also considering changes in the payment calculation methods for the sold surplus energy.

Photograph: Pixabay/Dimitris Vetsikas

Q: You announced a revision of the 2020 Strategic Investments Law and four proposals for strategic partnerships in the energy sector. Why is that?

A: The 2020 Strategic Investments Law has been problematic since its inception. The Anti-Corruption Commission raised concerns at the time because provisions in the law related to transparency and the process of acquiring strategic investment project status could pose corruption risks. The commission believed that the provisions did not sufficiently regulate how experts and the wider public could participate in selecting investment projects. When it comes to the four proposed laws, one was set to grant nearly 50 million euros in state aid to a Greek company, along with guaranteed purchase of the electricity and heat they produced at prices far higher than the actual market rates. Other strategic laws proposed giving fertile agricultural land for the construction of photovoltaic power plants, with the state again guaranteeing the purchase of electricity at high prices. It is important to emphasize that we are not against foreign strategic investments—they are beneficial for the country, but only if they provide value and benefit the citizens. We cannot allow foreign companies to exploit our natural resources while creating fiscal consequences for our budget without adding value to our energy system.

Interview by Milena Maglovski

"As young people who are aware of the importance of preserving the planet, we are thinking about directing our careers toward sustainable development and ecology"

METANCI – WINNING PROJECT FOR SUSTAINABLE DEVELOPMENT

Youth creativity and innovation play a key role in shaping a sustainable future. Young people worldwide, including those in our local communities, are increasingly taking the lead in finding solutions to the environmental challenges of modern society. Their ability to devise new approaches and technologies contributes to the creation of sustainable solutions that address the urgent needs of our planet.

A source of pride for Aleksinac and all of Serbia is the team of young researchers, Metanci, who recently won first place at a hackathon with an idea promoting methane as a solution for generating electricity, maintaining a system of free public transport, and supporting commercial activities in Aleksinac.

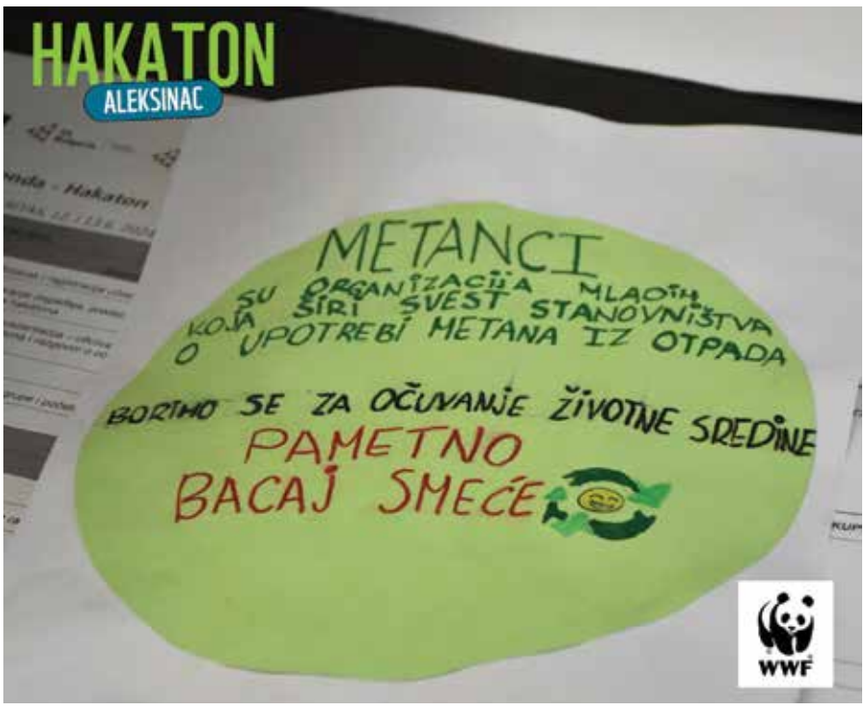
The team, consisting of Milica, Jana, Sara, Petar, and Dimitrije, presented a solution that combines environmental and economic benefits, catching the jury's attention and securing their place at the regional conference in Sofia.

In their presentation, the Metanci explained that methane is produced through the anaerobic decomposition of organic matter and is a primary component of natural gas. This gas can be used to generate electricity, heat, and fuel vehicles. While methane has its drawbacks, such as its negative impact on the ozone layer and high flammability, its proper use can be crucial for sustainable development.

Aleksinac is known as a mining town, and many mining accidents have been caused by methane. This reality motivated the Metanci team to focus on researching better ways to use and store this gas. Their idea involves placing containers for organic waste throughout the town, which would be composted and used to produce methane in biogas generators.

"When organic waste is composted, the decomposition process under controlled conditions allows methane to be produced as a byproduct. Then, biogas generators use a process called anaerobic digestion to produce methane. The good news is that, currently, projects under the sponsorship of the European Union

Photographs: WWF



are being carried out to supply municipalities with biogas plants," explained team member Jana Stošić.

Innovative Use of Methane for Sustainable Development

The Metanci team proposes several key ways to use the methane produced. A portion would be used as fuel, enabling the municipality of Aleksinac to fund the purchase of eco-friendly biogas-powered buses through the sale of the fuel. These buses would reduce pollution and provide free transportation for residents, addressing the problem of a lack of public transport in the area.

Another part of the production from biogas plants would be used as natural fertilizer, supporting agriculture in the municipality, which has as many as 70 villages. This would enable the production of food without the use of pesticides, improving the quality of life for the local population.

Finally, the third part of the methane would be used to supply thermal power plants, allowing them to remain operational even after the mines are closed. By using methane in cogeneration processes, it is possible to simultaneously produce heat and electricity, which would increase energy efficiency.

Recognition at the Hackathon and Expectations for Sofia

The victory at the hackathon held in Aleksinac is a significant achievement for these young people, affirming the value and originality of their solution.

"Recognition of the quality of our idea by experts at the hackathon opens doors to additional resources, mentorship, and support, which can help us further develop and implement our idea. It can also help us attract the attention of potential investors, partners, and users, which could speed up the implementation of our solution and expand its impact," Jana points out.

She adds that the team is eagerly looking forward to the regional conference in Sofia, where they hope other participants will also recognize the potential of their idea. They are excited about the opportunity to form new friendships and expand their knowledge, hoping that by teaming up with other groups, they could create large regional projects that will have an impact not only in their countries but also beyond.

Our interviewee particularly emphasized the importance of the education organized by WWF Adria for the students of the Aleksinac Grammar School and Prota Stevan Dimitrijević Technical School on the topic of sustainable solutions in the process of just transition.

This education is done under the auspices of the Play Jet project, which WWF Adria has been implementing in collaboration with organizations from North Macedonia, Montenegro, and Bulgaria for the third year in a row. The goal of educating high school and university students is to connect them with experts in energy efficiency from the country and region so that together, they can come up with solutions for successful green entrepreneurship.

Jana adds that the workshops they attended were not only exciting but also highly educational, which contributed to the development of their innovative idea.

"As young people who are aware of the importance of preserving the planet, we are thinking about directing our careers toward sustainable development and ecology. Working on this project has shown us how important it is to develop solutions that can contribute to environmental preservation, and we want to contribute to that mission in the long term," says Jana.

This team of young people has proven that the youth are ready to take responsibility for the future and actively contribute to a just energy transition and the preservation of our planet.

Their idea not only contributes to nature conservation but also drives social change and represents a concrete roadmap for a better and greener future.

Prepared by Milena Maglovski

CIRED 2024 – CONFERENCE ON ELECTRICITY DISTRIBUTION NETWORKS

The renowned international conference dedicated to electricity distribution, CIRED 2024, will be held from September 16 to 20, 2024, in Kopaonik, Serbia. This prestigious event, organized by the National CIRED Committee of Serbia in collaboration with numerous experts, companies, and institutions from the region, represents a key moment for everyone active in the electricity distribution sector and for those who want to stay informed about the latest trends and technologies in this field.

This conference has been gathering experts from around the world for decades, and this year's CIRED promises to be one of the most significant. Participants will have the opportunity to attend scientific sessions, panel discussions, and commercial presentations covering a wide range of topics, from integrating renewable energy sources to enhancing active distribution networks. Special attention will be given to new technologies and solutions that enable greater efficiency and sustainability in electricity distribution systems.

The organizers promise that this will be an event of great significance for everyone involved in the energy sector

Photograph: Unsplash/Andrew Hall

Lectures and Exhibition Area

This year, more than 800 participants are expected, including engineers, managers, researchers, and representatives of leading companies in the energy sector. As in previous years, the conference will also include an exhibition area where participants can get acquainted with the latest products and solutions on the market and forge valuable business contacts and partnerships.

The CIRED 2024 program includes keynote lectures delivered by renowned energy sector experts and roundtable discussions on key challenges facing the electricity distribution sector in the era of energy transition. One of the central topics will be the integration of renewable energy sources into power distribution grids, with a focus on technical solutions that ensure stable and efficient system operation.

Numerous case studies from practice will also be presented during the conference, offering insights into specific solutions implemented in various parts of the world. Participants will be able to exchange experiences, share challenges they have encountered, and receive feedback from other industry experts.

The renowned international conference dedicated to electricity distribution, CIRED 2024, will be held from September 16 to 20, 2024, in Kopaonik, Serbia

Photograph: Unsplash/Shivansh Singh

Knowledge Enhancement and Networking

Through working groups, publications, and conferences, CIRED continuously contributes to developing new standards and best practices in electricity distribution. This conference is, therefore, a unique opportunity for all participants to enhance their knowledge, exchange ideas, and contribute to the further development of this key industry.

The traditional gathering on one of Serbia's most beautiful mountains, Kopaonik, provides an ideal combination of business and a relaxing environment. In addition to energy-related topics, participants will be able to enjoy the natural beauty of this mountain resort, further contributing to a positive atmosphere for networking and informal meetings.

The organizers promise that this will be an event of great significance for everyone involved in the energy sector. It will offer a chance to learn about the latest trends, technologies, and solutions that will shape the future of electricity distribution. Don't miss this opportunity to be part of a global gathering of industry experts and leaders and contribute to the further development of a sector crucial for the future of energy on our planet.

Prepared by Milica Radičević

GREATER INCLUSION OF CITIZENS IN THE ENERGY TRANSITION

The Heinrich Böll Foundation is a German political foundation that has been active in Serbia for over two decades. During this time, they have supported more than 50 projects in the area of just energy transition, with funding amounting to one million euros. The Foundation is recognized as an organization aligned with green and left-leaning ideas and advocates for a greener and more just society.

"Alongside promoting a democratic political culture, which represents one of the two pillars of our work in the region, we also support climate change and energy policy projects: combating energy poverty, reducing air pollution, and promoting sustainable urban mobility. We have also supported the work of organizations that have initiated a series of strategic litigation cases against polluters in the courts of Serbia and Montenegro," said Nino Lejava, director of the Belgrade office of the Heinrich Böll Foundation. We spoke with her about implementing the energy transition, the Foundation's activities related to environmental protection, educating citizens, involving local communities in the energy transition process, and the European Green Deal.

Q: Who should lead the energy transition, and what is essential for its implementation?

A: The energy transition is a complex process in which renewable energy sources such as hydropower, solar, and wind energy continuously re-

Photographs: (top) Unsplash/Ries Bosch; (bottom) Unsplash/Ian van Landuyt

There are municipalities in Serbia that have advanced further in the energy transition process and can be considered more progressive than the state itself, which is assumed to lead the energy transition process primarily due to its capacities, resources, and personnel

place energy from fossil fuels. Above all, it requires functional institutions and the political will of decision-makers. In this context, we support the concept of civic energy, which should become a key driver of the transition of the energy system toward a local economy based on renewable energy sources through individual initiatives. Through collaboration with local governments and two energy cooperatives in Serbia, the Foundation supports a participatory process that involves hundreds of citizens. It is crucial for a successful energy transition for citizens to be involved in decision-making to reduce the monopoly currently held by large power companies, which influences electricity prices.

For the energy transition to be successful, the first thing that needs to be done is for decision-makers in Serbia to adhere to the plans outlined in the Green Agenda for the Western Balkans, where decarbonization is marked as one of the main priorities. Transparent policies and public debate are needed in society, meaning citizens must be included in the process. Finally, for the energy transition to be successful, it must also be just, paying particular attention to citizens significantly affected by the reforms, such as miners in traditional industries. It is essential not to repeat the mistakes of the past when, during the wave of privatization, a large number of people lost their jobs.

NINO LEJAVA has been the director of the Heinrich Böll Foundation's Belgrade office since April 2022. Prior to this, she was the director of the Heinrich Böll Foundation offices in Prague and the South Caucasus. Ms Lejava is one of the founders of the Soviet Past Research Laboratory and the founder of the publishing house Melani. She has edited and co-edited numerous publications. She studied international law and European studies at Tbilisi State University, Georgia, the University of Hamburg, and the Europa-Kolleg Hamburg – Institute for European Integration, Germany.

Q: What activities does the Foundation undertake in the field of environmental protection and sustainable development policy?

A: Our goal is to support civil society and institutions in Serbia in implementing climate policies. This is in line with the goals of international climate agreements and the commitments made within the EU accession process. The Foundation always develops its programs according

Photograph: (Lejava) coutresy of Nino Lejava

to societal priorities and pressing issues that affect citizens. In recent years, our focus has been on energy poverty, energy efficiency, air pollution, and monitoring EU integration in Chapter 27—Environment. Together with partners within the Coalition 27, which brings together civil society organizations that have been monitoring the implementation of Chapter 27 in the field of environmental protection since 2014, the Foundation has produced dozens of studies with recommendations for improving the state of the environment, though unfortunately, only some of these have been recognized and implemented by decision-makers. The annual reports of Coalition 27 systematically address the environmental situation and assess reforms in this sector.

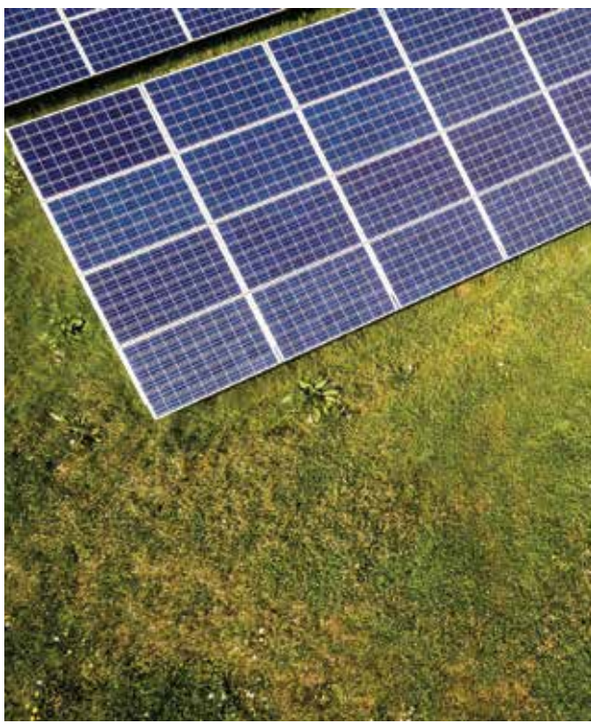
Q: How educated are Serbian citizens about the concept of energy transition, and what should their education be based on?

A: Citizens are often left to their own devices when it comes to informing themselves about the energy transition. The messages they receive from decision-makers are frequently contradictory, sometimes even populist, especially when it comes to phasing out coal and decarbonization, instead of presenting the public and citizens with the obligations Serbia has signed on to, such as shutting down thermal power plants as outlined in the National Climate and Energy Plan, which for the first time provides clear guidelines for phasing out coal by 2050.

Many projects support energy efficiency in local governments, some of which have been supported by the Heinrich Böll Foundation. One example is a series of discussions

THE EUROPEAN GREEN DEAL

The European Green Deal is an ambitious plan that outlines how the EU and the Western Balkan countries, through the Green Agenda for the Western Balkans, will embark on the path of green transition with the ultimate goal of achieving climate neutrality by 2050. This plan was initiated by European Commission President Ursula von der Leyen in 2019, and the newly elected European Parliament reaffirmed its commitment to this plan in 2024.



It is crucial for a successful energy transition that citizens are involved in the decision-making process to reduce the monopoly currently held by large power companies, which influence electricity prices

Photographs: (left) Unsplash/Jannet Serhan; (middle) Unsplash/Andreas Gucklhorn

with residential community managers about building energy rehabilitation, financed through loans from the European Bank for Reconstruction and Development (EBRD). The number of citizens who attended these information days shows significant interest in the energy transition, especially given the constant rise in energy prices, particularly electricity. Educating and informing citizens about the energy transition should be the responsibility of decision-makers at the national level; however, we are witnessing that some local governments are more progressive in informing citizens than the ministries themselves.

itself, which is assumed to lead the energy transition process, primarily due to its capacities, resources, and personnel. Municipalities are particularly interested in energy efficiency programs because they can save money on public lighting or building heating.

As a positive example of cooperation with municipalities in Serbia, I would highlight the municipality of Priboj, which, with the expert assistance of the Foundation, study visits, and the provision of information on best examples from the region, managed to replace coal as a fuel for heating plants with wood chips, or biomass, sourced from Serbia.

Q: How important is the involvement of local communities in the energy transition process?

A: The Foundation's experience so far has shown that local communities are significantly interested in acquiring new knowledge and enhancing their capacities regarding the energy transition. Some municipalities in Serbia have advanced further in the energy transition process and can be considered more progressive than the state

Biomass is a versatile renewable energy source, often produced from waste in the wood industry. It should be noted that biomass also carries risks, such as unsustainable deforestation in the region. Intensive agricultural production is also associated with soil pollution.

Other municipalities we have collaborated with include Užice and Sremski Karlovci, and I would particularly highlight the municipality of Preševo due to its specific ethnic composition. Together with partners from the RES Foundation, we provided professional support to the municipality to apply for funding for energy efficiency projects. As a result, air pollution has decreased in most of these municipalities, especially Užice and Priboj. Although the situation is far from ideal, there have been improvements.

Interview by Mirjana Vujadinović Tomevski

Photographs: (top) Unsplash/Ananth Pai; (middle right) Unsplash/Gustavo Quepon

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