

Dino Tutundžić

State Secretary at the Ministry of
Energy and Mining of Montenegro

Energy Transition as a Development Opportunity for Montenegro

**ASEI:
The Path Towards
Competitive
and Sustainable
Production**



LUXOR
solar module manufacturer

**LUXOR SOLAR RESPONDS TO MARKET
NEEDS WITH A CLEARER PORTFOLIO**



YUDO AIR

Discover The Future of Family Travel

YUDO AIR is designed for the global market and the contemporary family. Embracing sustainability and smart living, the innovative YUDO AIR seamlessly combines sleek, futuristic aero aesthetics with aviation-grade safety. A refined, reliable, and stylish travel experience for every family member.



Aurora
Green



Sunrise
Gold



Moon
White



Meteorite
Blue



Galactic
Black



White body+
Black roof

BUSINESS WEB PORTAL ON CLEAN ENERGY 3

IN THIS ISSUE...



INTERVIEW 6
DINO TUTUNDŽIĆ, State Secretary at the Ministry of Energy and Mining of Montenegro
 ENERGY TRANSITION AS A DEVELOPMENT OPPORTUNITY FOR MONTENEGRO
 Montenegro's energy sector is undergoing one of the most intensive periods of transformation in its history.

PRESENTING 12
ASSOCIATION OF SERBIAN ENERGY-INTENSIVE INDUSTRIES (ASEII)
 THE PATH TOWARDS COMPETITIVE AND SUSTAINABLE PRODUCTION

INTERVIEW 16
ZORAN ĐORĐIEVSKI, Director General of the National Electricity Market Operator (MEMO)
 MORE TRADING, MORE FLEXIBILITY – MEMO'S NEW DIRECTION
 The introduction of intraday trading, the possibility of negative prices and the development of the guarantees of origin market are all part of the process through which North Macedonia is seeking to bring its market closer to European standards.



PRESENTING 20
ABB
 WHEN A BUILDING BEGINS TO UNDERSTAND ITSELF

INTERVIEW 22
IGOR TODOROVIĆ, Regional Director for Southeastern Serbia at MT-KOMEX
 FIGHTING DROUGHT WITH SUNSHINE: HOW SOLAR POWER PLANTS TAKE OVER WHEN RIVERS RUN DRY

PRESENTING 26
LUXOR SOLAR
 LUXOR SOLAR RESPONDS TO MARKET NEEDS WITH A CLEARER PORTFOLIO
 The European solar market has undergone major changes in recent years. Financial pressures, falling module prices, competition from Asia, and growing demand for renewable energy sources have changed the way investors choose equipment.



INTERVIEW 30
ARMIN HODŽIĆ, Director of the Energy Sector at the Chamber of Economy of the Federation of Bosnia and Herzegovina
 FROM A REGULATORY OBLIGATION TO A QUESTION OF COMPETITIVENESS: WHAT DOES CBAM BRING TO INDUSTRY?

PRESENTING 34
MIVUS
 NEW EUROPEAN UNION DIRECTIVES AND THE FUTURE OF ENERGY RENOVATION OF BUILDINGS IN SERBIA

INTERVIEW 36
INESSA SHAHNAZAROVA, Founder and Executive Director of Invest In Network and Founder of Energy Week Western Balkans
 THE REGION HAS MOVED BEYOND AMBITION – NOW IT IS TIME FOR IMPLEMENTATION



PRESENTING 40
K2 SYSTEMS
 UNLOCKING THE POTENTIAL OF VERTICAL FACADE INSTALLATIONS
 Facade-mounted systems can enhance building energy efficiency, contribute to certification standards, and improve sustainability metrics.

INTERVIEW 44
JELENA BUNČIĆ, organizer of the SEE ENERGY event and President of the National Biomass Association SERBIO
 SEE ENERGY 2026: ENERGY, INVESTMENT AND THE MARKET ENTER A NEW PHASE

PRESENTING 48
VOLVO TRUCKS
 VOLVO CELEBRATES A CENTURY OF INNOVATION WITH SPECIAL TRUCK EDITION

OPINION 50
Prof. PETAR M. GVERO, PhD, University of Banja Luka, Faculty of Mechanical Engineering
 URBAN OVERHEATING AND SUMMER ENERGY POVERTY
 Climate analyses based on statistical data for Bosnia and Herzegovina from 1960 to 2023 show a steady increase in the number of very hot summer days with temperatures above 35°C, by approximately 4–8 days per decade, with projections suggesting this trend will intensify further throughout the century.



 **HIGHLIGHTS** 54
ACCORDING TO THE OPINION
OF THE EDITOR

 **INTERVIEW** 56
ALEKSANDAR MILIĆ, Mentor of the
H-Bridges team
FROM A STUDENT PROJECT TO
THE WORLD STAGE



 **PRESENTING** 60
CHARGE&GO
CHARGE&GO AND SUNGROW:
PARTNERSHIP FOR A NEW
GENERATION OF CHARGING
INFRASTRUCTURE
Successful development of electromobility
requires more than simply increasing
the number of chargers – it is important
that users can rely on charger availability
and reliable service at carefully selected
locations.



 **FOCUS** 62
A SUSTAINABLE FUTURE FOR
CONSTRUCTION STARTS WITH
CEMENT
When we talk about sustainable construction,
we most often think of energy-efficient
buildings, green roofs, rainwater harvesting,
or renewable energy sources.

 **CURRENT TOPIC** 68
DELIBLATO SANDS: BEFORE THE
FLAMES AND AFTER

 **INTERVIEW** 72
Dr. IZTOK KAMENSKI, President of the
Slovenian Green Building Council
(GBC Slovenia)
SLOVENIA AND GREEN BUILDING:
A ROADMAP FOR A SUSTAINABLE
FUTURE IN THE REGION



 **INTERVIEW** 78
DAMIR MEDVED, Master of Electrical
Engineering and President of the "Bez
granica" association
FROM THE LOCAL COMMUNITY TO
THE ENERGY GRID
Citizen energy is no longer simply an idea of
households installing solar panels on their
rooftops.

 **DISCOVER MORE** 82
SERBIA'S NEW ENVIRONMENTAL
PROTECTION STRATEGY:
DIRECTIONS FOR ACTION UNTIL
2033



 **PEOPLE AND CHALLENGES** 84
TATJANA ANIĆ, Explore Serbia/Explore
Balkans agency
HOW E-BIKE TOURS HAVE BECOME
THE NEW ACTIVE HOLIDAY TREND
As more and more people seek holidays that
combine physical activity, nature, and an
authentic destination experience, one form of
tourism in Serbia is experiencing a real boom
– one-day electric bike tours.

 **DISCOVER MORE** 86
HOW SUSTAINABILITY IS
CHANGING THE CROATIAN
CONSTRUCTION INDUSTRY
Sustainable construction in Croatia is no
longer merely a matter of energy efficiency,
but of broader planning, construction, and
building use



 **DISCOVER MORE** 90
LANDFILL FIRES IN SERBIA: WHAT
IS THE ACTUAL RISK?
Landfill fires in Serbia have long ceased to be
incidents that can be seen as solely a local
municipal problem. Their consequences can
extend far beyond the boundaries of the site
itself – from air pollution and exposure of the
population to harmful substances to long-
term consequences for the environment and
human health.



 **ECO-INNOVATIONS** 92
A NEW LIFE FOR THE SPACE
BENEATH THE ASPHALT

 **ECO-INNOVATIONS** 94
A FAÇADE THAT FLIES BY CRANE
– THE GERMAN RECIPE FOR
BUILDING RENOVATION
The construction sector is one of the
largest consumers of energy and sources of
greenhouse gas emissions, which is why the
energy renovation of existing buildings plays
a key role in achieving climate targets.



 **PEOPLE AND CHALLENGES** 96
DRAGANA KOJIČIĆ, architect
TRADITIONAL KNOWLEDGE
BUILDS A NEW PATH TO NATURAL
CONSTRUCTION

 **ECO-INNOVATIONS** 98
CARBON-FREE LIME: AN
INNOVATION TRANSFORMING THE
CONSTRUCTION INDUSTRY

 **DISCOVER MORE** 100
SERBIA AMONG 177
COUNTRIES WORLDWIDE: THE
ENVIRONMENTAL PICTURE
THROUGH EPI 2026



ENERGY TRANSITION AS A DEVELOPMENT OPPORTUNITY FOR MONTENEGRO

The submarine cable to Italy, the establishment of oil reserve obligations for the first time on a serious scale, auctions for hundreds of megawatts of solar power plants, the green hydrogen program, and the plan for a just transition of Pljevlja – Montenegro’s energy sector is undergoing one of the most intensive periods of transformation in its history.

We discussed the reforms already implemented, the challenges ahead, and the vision for 2030 with Dino Tutundžić, State Secretary at the Ministry of Energy and Mining.

**One of the key priorities
is also the integration
of Montenegro’s
electricity market with
the European market**

Q: Montenegro is on the path towards European integration, which also entails alignment with the European Union's climate and energy legislation. What are the priorities of the Ministry of Energy and Mining in the process of aligning with European climate regulations, and what key reforms do you expect in the coming years?

A: Montenegro's energy sector has entered a very intensive, and I would say final, phase of European integration. Our goal is not merely to formally align with the *acquis communautaire* of the European Union, but also to build a functional, modern, and competitive energy system fully integrated into the European market.

During the previous period, a historic reform breakthrough was achieved through the adoption of the new Energy Law, the Law on the Use of Energy from Renewable Sources, the Law on Cross-Border Exchange of Electricity and Natural Gas, and the Law on Security of Supply with Petroleum Products. In this way, we transposed a significant part of European

energy legislation and created the basis for its full implementation.

Regarding the security of supply of petroleum products, significant progress has been made in recent years in alignment with European legislation. A legislative and institutional framework has been established to create mandatory petroleum product stocks in accordance with Directive 2009/119/EC, and Montenegro has already begun its implementation, with the aim of reaching the prescribed reserve level before accession to the European Union.

It is particularly important that we expect the conditions for the closure of negotiations on Chapter 15 – Energy to be met by the end of this year, thereby confirming the significant progress in reform Montenegro has achieved in this area.

One of the key priorities is also the integration of Montenegro's electricity market with the European market, i.e., market coupling. Montenegro has a particular advantage in this regard thanks to its strong



Dino Tutundžić

State Secretary at the Ministry of Energy and Mining

regional interconnections and the submarine cable to Italy.

The next phase will therefore primarily be a phase of implementation: further market integration, the development of renewable energy sources and grid infrastructure, increasing energy efficiency and system flexibility, strengthening security of supply, and the gradual decarbonization of the energy sector.

For us, the energy transition is not merely an obligation arising from the EU accession process. Above all, it is a development opportunity. Montenegro has the potential to turn its renewable energy resources, geographical position and connectivity with the European energy system into one of its key economic advantages.

Q: Investor Interest in Renewable Energy Projects in the Region Continues to Grow. Is Montenegro Ready to Support More Significant Development of New Solar, Wind and Other Renewable Energy Projects, and What Measures Is the Ministry Implementing to Improve the Investment Environment,



Accelerate Procedures and Ensure the Stable Development of the Sector?

A: Investor interest in Montenegro is very high, confirming that our country's potential in the field of renewable energy sources has been recognized. We have excellent conditions for developing solar and wind power plants, but our goal is not simply to increase the number of projects or the installed capacity, but to ensure their planned, sustainable, and market-based development.

With the adoption of the Law on the Use of Energy from Renewable Sources, a modern support system based on market principles was introduced. Last year, we launched the renewable energy auction process for the first time by issuing a public call to allocate rights to a market premium for 250 MW of solar power plants at unspecified locations. We are now in the final stage of preparations for a new public call for an additional 250 MW of solar capacity.

Key provisions of the RED III Directive have also recently been adopted to further accelerate renewable energy development, primarily by creating conditions for more efficient, faster procedures for implementing new projects. In this way, we are further improving the regulatory framework and bringing it closer to European Union standards.

However, we are well aware that investors look beyond energy legislation alone. Spatial planning, grid connection, environmental procedures, and coordination among different institutions are equally important for project implementation. That is precisely why we are working to make the entire process simpler and even better coordinated.

It is also important to highlight the development of distributed generation. Programs to install solar panels for households and businesses have demonstrated that the energy transition is not reserved solely for large investors. Citizens and

companies are increasingly becoming active participants in the energy market.

Our ambition is very clear: a quality project, with secured financing and compliance with spatial planning and environmental standards, should be provided with a transparent and clear path from concept to implementation.

Q: In addition to its potential in solar, wind and hydropower, Montenegro also has resources that have so far been insufficiently utilized, such as geothermal energy, biogas and certain mineral resources. Which of these resources does the Ministry consider to be of greatest strategic importance for future development, and are there concrete plans for their more intensive utilization?

A: Montenegro's future energy development is primarily based on the

resources for which we have the greatest confirmed potential: hydropower, solar energy and wind energy. However, modern energy policy must take a much broader view of domestic resources.

Geothermal energy, biogas and biomass can play a significant role, particularly in local energy systems, heat production, agriculture and the development of the circular economy. Their more substantial use requires more detailed mapping of their potential and the identification of projects that are technically and economically viable.

When it comes to mineral resources, our approach is equally clear: their utilization must be based on the principles of sustainable development and the highest environmental protection standards.

At the same time, the goal should not be limited to the extraction and



export of raw materials. We need to consider how to retain as much of the value chain as possible within Montenegro, that is, how the use of mineral resources can generate greater economic benefits, create new jobs and contribute to the development of local communities.

The global energy transition is dramatically increasing the importance of certain mineral resources and critical raw materials. That is why we will also assess Montenegro's potential in the context of new European and global needs, but always guided by the principle of responsible and sustainable use.

Q: Decarbonization entails not only the development of renewable energy sources, but also the modernization of the energy and mining sectors. What are the Ministry's key objectives when it comes to reducing greenhouse gas emissions, and how do you plan to reconcile the needs of the economy, energy security and climate objectives?

electricity generation, but due to the system's dependence on hydrological conditions and the importance of the Pljevlja Thermal Power Plant, the transition must be carefully planned.

Our approach is not to administratively shut down existing capacities before ensuring reliable replacements. It is necessary to simultaneously develop new renewable energy sources, strengthen the transmission and distribution grid, develop battery storage and other sources of flexibility, increase energy efficiency, and further integrate Montenegro's market with regional and European markets.

At the same time, we are also analyzing various options that could contribute to system stability during the transition period. In this context, we are considering opportunities to develop gas infrastructure, including the Ionian-Adriatic Pipeline (IAP), a project of regional importance, as well as the potential for LNG infrastructure and gas-fired generation

Program 2026–2028, we have established a framework for the first more concrete activities in this field, primarily in sectors where direct electrification is difficult to achieve.

A particularly important dimension of this process is the just transition of Pljevlja, which is one of the Ministry's priorities. We are aware that decarbonization cannot succeed unless it also takes into account people, jobs, and the long-term economic prospects of the local community.

Precisely because of the importance of this process, the Council for a Just Transition was established last year, headed by the Minister of Energy and Mining, Admir Šahmanović. This has given the just transition a strong institutional framework and a clear place among the priorities of Montenegro's energy policy.

Concrete steps have already been taken, including the adoption of the Just Transition Roadmap, and with the support of the World Bank, we are preparing a clear and comprehensive Just Transition Plan to define the strategic and operational framework for transforming the Pljevlja area. Our goal is for this process to bring new investment, diversification of the local economy, new jobs, and training and reskilling programs, so that the transition is not only environmentally and energetically sustainable, but also socially just.

That is why we do not view decarbonization as a matter of shutting down individual generation capacities, but as a process of transforming the entire energy system and creating new development opportunities.

Q: A Reliable Transmission and Distribution Grid Is One of the Prerequisites for a Higher Share of Renewable Energy Sources. To What Extent Is the Existing Energy Infrastructure, Including Transmission Lines and the Transmission System, Ready to Accommodate New Generation Capacities, and What Are the Most Important

A: The greatest challenge of the energy transition is to strike a balance between three equally important objectives: decarbonization, security of supply, and affordable energy for citizens and businesses. None of these three elements can be considered in isolation.

Montenegro already has a high share of renewable energy sources in

capacity. It is important, however, to emphasize that we are discussing options whose economic, technical, and market viability must be carefully analyzed, rather than predetermined investment decisions.

We also want to be prepared for technologies that will play a greater role in the coming decades. By adopting the Green Hydrogen Development



Infrastructure Projects Planned for the Coming Period?

A: The development of new generation capacities must be accompanied by the development of the grid. Without strong transmission and distribution infrastructure, it is not possible to achieve either our energy or climate objectives.

In this respect, Montenegro has a very good starting position. Our electricity system is strongly interconnected with neighboring systems, while the submarine interconnection with Italy gives Montenegro strategic importance as an energy link between the Western Balkans and the European Union.

An important step towards further integration with the European market was taken last year, when Ministers Šahmanović and Pichetto Fratin signed a Memorandum of Understanding outlining the principles and objectives for integrating the electricity markets of Montenegro and Italy. This agreement provides significant institutional support for integrating our electricity markets and for Montenegro's further integration into the European single market.

In parallel, intensive discussions have continued with the Italian side and the company TERNA regarding the construction of a second submarine cable circuit between Montenegro and Italy, a project already included in TERNA's development plans. The implementation of this project would further increase cross-border transmission capacity and enable Montenegro to further leverage its position as an energy link between the Western Balkans and the European Union.

I would particularly highlight the Trans-Balkan Electricity Corridor, one of the most important infrastructure projects for Montenegro and the region. In July, the section of the corridor to Pljevlja was put into trial operation, representing a key step forward in the implementation of this project and an



important step towards the full integration of Montenegro's electricity system with regional and European markets. The completion of the remaining sections will further increase transmission capacity, system security and the ability to integrate new renewable energy sources.

At the same time, the distribution system must also undergo significant transformation. The growing number of solar power plants and prosumers, as well as stronger electrification of transport and heating in the future, are changing the way the grid operates.

Therefore, investments in the grid will be just as important as investments in new power plants in the coming period. In addition to conventional infrastructure, digitalization, smart system management, electricity storage and other flexibility mechanisms will become increasingly important.

Our ultimate goal is not simply to ensure that the grid can accommodate new generation facilities, but to build a system that will enable Montenegro to fully harness its renewable energy potential and further leverage its position as a regional energy hub.

Q: The Petroleum Products Market Has Faced Numerous Challenges in Recent Years, from Disruptions in Supply Chains to Significant Price Fluctuations. How Do You Assess Montenegro's Response to These Challenges, and What Is the State's Long-Term Strategy Regarding Dependence on Fossil Fuels and the Gradual Transition to Cleaner Energy Sources?

A: – Montenegro is entirely dependent on imports of petroleum products and is therefore directly exposed to disruptions in international markets, ranging from significant price fluctuations and supply chain problems to geopolitical crises that we have been witnessing with increasing frequency in recent years.

These experiences have shown that the issue of fuel supply is not merely a market issue, but an important component of the country's overall energy security.

That is precisely why significant progress has been made over the past two years in an area in which Montenegro had long lagged behind: the establishment of mandatory petroleum product stocks. The legislative and regulatory framework has been adopted, a financing model has been



defined, the necessary institutional conditions have been established, and the concrete process of building up the reserves has begun.

Part of the obligation is already being fulfilled by petroleum product importers, while the state, through the Hydrocarbons Administration, is simultaneously working to procure its share of the reserves and to increase available storage capacity. The modernization of the state-owned storage facilities at the Port of Bar is also underway. Our goal is for Montenegro to establish full mandatory stocks that will not merely represent compliance with a European obligation, but a genuine security mechanism in the event of a serious disruption to supply.

Another important reform step is the fuel marking project. The contract for its implementation was signed in July, and preparatory activities for its full operation are currently underway. We expect this system to contribute to more effective market oversight, reduce illicit trade, and protect both budget revenues and consumers, as well as companies operating in compliance with regulations.

When it comes to reducing dependence on fossil fuels in the long term, we have to be realistic. Petroleum products will continue to play an important role for some time, particularly in transport, and such a transition cannot happen overnight.

That is why we are working in parallel in two directions: making today's supply more secure and the market better regulated, while at the same time gradually reducing our dependence on fossil fuels.

The electrification of transport, sustainable biofuels, other renewable fuels and, where economically and technologically justified, green hydrogen should enable this transition to take place gradually and sustainably, without compromising security of supply or the functioning of the economy.

Q: The Energy Transition Also Raises the Question of New Technologies, Energy Storage, System Flexibility and the Development of Domestic Resources. Where Do You See Montenegro by 2030 – What Are the Most Important Goals the Ministry Wants to Achieve in the Field of Energy and Mining, and What Will Be the Key Indicators of Success in This Process?

A: By 2030, we want a significantly different energy system, with much greater renewable energy capacity, a stronger and digitalized grid, developed energy storage systems, and an electricity market that is functionally integrated with the European Union market.

We expect strong growth in solar and wind energy, the continued responsible utilization of hydropower potential in compliance with the highest environmental standards, and the development of battery storage systems that will provide the energy system with additional flexibility.

At the same time, energy efficiency needs to be improved, while citizens and businesses should be

enabled to play an increasingly active role, not only as consumers but also through their own energy generation, storage and consumption management.

One of the key objectives is to integrate Montenegro's electricity market with the European market. Combined with our regional interconnections and the submarine cable to Italy, this could further leverage Montenegro's geographical and energy position.

From a security-of-supply perspective, we also want a state that is significantly more resilient to external energy disruptions. This means fully established mandatory petroleum product stocks, a transparent and well-regulated fuel market, and a gradual reduction in transport's dependence on fossil fuels.

By 2030, we should also have a much clearer picture of the potential role of gas in Montenegro's and the region's energy mix, as well as which infrastructure solutions have long-term economic and strategic justification.

We want to gradually move technologies such as green hydrogen from the strategic planning phase towards concrete pilot and development projects.

However, for me, the key indicator of success will not be simply the number of new megawatts.

Success will mean that, by 2030, Montenegro has a more secure and resilient energy system, more domestic clean energy, a more developed grid, higher investment levels, lower emissions, and a more competitive market, while ensuring that the transition remains socially and economically sustainable.

In other words, the goal is for Montenegro to move from a country with significant energy potential to one that has truly transformed that potential into one of its most important development advantages.

Interview by Milena Maglovski

THE PATH TOWARDS COMPETITIVE AND SUSTAINABLE PRODUCTION



Stanislava Simić
Director of the Association of Serbian
Energy-Intensive Industries (ASEII)

One of the things you notice most clearly when you speak to companies from different industrial sectors on a daily basis is just how much is actually encompassed by a single word like decarbonization – a whole range of different processes, technologies, investments and decisions.

What is particularly interesting is that there is no single path to follow. Different industries start from different positions and are developing their own solutions. This diversity perhaps best illustrates the scale of the transformation ahead of us, as well as the wealth of knowledge, investment, and innovation already within industry itself.

The pages that follow bring together precisely these kinds of stories. Our members share their strategies, projects, and development priorities, each from the perspective of their own industry and the challenges they face.

As the Association of Serbian Energy-Intensive Industries, our role is to bring these different perspectives to the same table. When we look at them together, it becomes clear that what lies ahead is not simply a process of reducing emissions, but a broader transformation in how industry will produce, invest, and create value in the years to come.



Branko Zečević
President of Metalfer Group and
President of the ASEII Assembly

I believe that the large companies that are members of our association are among those best prepared for the challenges posed by decarbonization and that they recognized in good time the inevitability of forthcoming regulation in this area. Smaller companies, as well as those relying on outdated technologies, have not entered this period from such a strong position. A particular challenge is the constant evolution of decarbonization-related



regulation, which makes it difficult for companies to keep up with all the changes. Perhaps an even greater challenge is that decarbonization requires substantial capital investment, which many companies cannot finance themselves or secure financial support for.

Companies seeking to place their products on the EU market must reduce the carbon footprint of their products in order to keep the amount of CBAM charges paid by their EU importer-customers as low as possible. This means that investing in reducing the carbon footprint of products is not optional – it is an imperative that must be addressed.

At Metalfer, we began investing in decarbonization as early as 2020, fully aware of what lay ahead. We invested significant funds in modernizing our production, with a particular focus on reducing the carbon footprint of our products. Today, we can take pride in having one of the lowest carbon footprints per ton of finished product among European steel producers.

Unfortunately, we had to bear the full financial burden of this decarbonization effort ourselves, as we had neither domestic funds dedicated to decarbonization nor access to EU funding. Another challenge is the price of electricity in Serbia, which is now among the highest in Europe. While our EU competitors pay between €40 and €65 per MWh for electricity, thanks to the support that EU countries provide to their energy-intensive industries, we pay significantly more than €100 per MWh.

We will work with the relevant government authorities to identify ways of reducing electricity costs for strategic industrial sectors, including steel production. We hope to receive their understanding and support, without which the survival of Serbia's energy-intensive industries could be called into question.



Marko Muhadinović

Technical Director of Holcim Serbia's Cement Plant

Technological leadership in the cement industry means translating materials science, process engineering and resource management into lower-carbon cements, without compromising performance. Holcim Serbia has taken a pioneering step: we were the first in Serbia to eliminate CEM I from our portfolio, before the regulatory framework required it, and replace it with lower-carbon cements. This transformation involves reducing the clinker factor, optimizing mineral components, applying alternative materials, and improving energy and process efficiency. In this way, decarbonization becomes a platform for innovation, industrial excellence, and long-term competitiveness.

A sustainable portfolio plays a decisive role in this transformation

because innovation delivers real impact only when it is available on the market and applicable on a large scale. ECOPlanet cements and ECO-Pact concrete reduce embodied CO₂ emissions without compromising strength, durability, and reliability. In this way, we enable investors, designers, and contractors to reduce emissions across the entire project. Our ambition is for sustainable solutions to be the standard in construction, not a separate category.

At the center of this model is the circular economy. Circularity is not just recycling, but an industrial model in which we keep materials in use for longer, reduce the consumption of primary resources, and return by-products from other industries to production as valuable raw materials. Holcim's ECOCycle technology enables solutions with 10 to 100 percent recycled material globally, while maintaining the required performance. Two consecutive PwC "ESG Leaders" recognitions, in 2025 and 2026, confirm that Holcim Serbia is taking a systemic approach.

The ability to develop technology, the market and partnerships simultaneously will determine the speed of further transformation. Holcim's NextGen Growth 2030 strategy envisages that more than half of net sales of cement and ready-mix concrete will come from ECOPlanet and ECO-Pact products, along with recycling more than 20 million tons of construction materials annually. Global targets gain value only when we translate them into local projects and measurable results.





Zorica Popović
General Manager of Elixir Group

Decarbonization is one of Elixir Group's strategic development directions and an important prerequisite for the long-term competitiveness of energy-intensive industry. As part of the Prahovo 2027 investment cycle, the company is developing projects that combine production modernization, more efficient resource use, and a reduced carbon footprint.

The Waste-to-Energy Plant in Prahovo is central to this transformation and is planned as a facility for the thermal treatment of non-recyclable waste and energy recovery. By



using a locally available resource to produce the thermal energy required for industrial processes, the facility reduces dependence on fossil fuels, supports the circular economy, and improves the complex's energy security. The facility is designed for a capacity of up to 100,000 tons of waste per year and the production of 30 MW of thermal energy, in accordance with best available techniques and relevant European standards.

At Elixir Group, decarbonization is not viewed as an individual project, but as part of the broader industrial transformation of Prahovo into a more resource- and energy-efficient system. In synergy with the new phosphoric acid production technology, CO₂ emissions per ton of product are expected to decrease, which is particularly significant in the context of European climate policies, the CBAM mechanism, and increasingly demanding market expectations.

For Elixir Group, sustainable transformation means planning industrial development over the long term, responsibly and in line with the changes shaping the European economy. For us, decarbonization is not only a regulatory requirement, but also a matter of competitiveness, energy stability and responsibility towards the community in which we operate. The projects we are developing in Prahovo enable us to reduce fossil fuel use, use resources more efficiently, and build an industrial system prepared for future market standards.

Alongside investments in energy transformation, Elixir Group is also developing higher value-added products, including crystalline fertilizers intended for more precise and sustainable agriculture. In this way, the company's development is directed towards an industry that strengthens competitiveness, reduces its environmental impact, and contributes to the region's green transition.



Siniša Mauhar
General Manager of CRH Western Balkans



Sustainability is no longer a question for the future, but an everyday business reality. In the cement industry, decarbonization is based on several key areas: increasing the use of alternative fuels, reducing the clinker factor in cement, using alternative raw materials, improving energy

efficiency, and developing new technologies for CO₂ capture.

At CRH Adria & Western Balkans, we are already implementing several specific projects, including the chlorine bypass at Popovac, the development of alternative fuel capacities through the Sapphire platform, the use of fly ash from EPS, and the construction of a solar power plant. Our goal is to reduce the carbon footprint of our products while at the same time offering our partners more sustainable construction solutions.

Globally, CRH invests significant resources in innovation through its own research teams, venture funds, start-up partnerships and the development of new products. Our task is to transfer this global knowledge and experience to local markets and make it available to investors, designers and contractors across the region.

Today, CRH Adria & Western Balkans brings together several complementary business segments. Through Moravacem, we are present in the cement and concrete sectors; through Sapphire, we develop alternative fuels, alternative raw materials and circular solutions; through Thermostone, we operate in the autoclaved aerated concrete segment; while the acquisition of Kufner Group has significantly strengthened our presence in aggregates.

What sets us apart is the fact that we do not offer products alone. Our goal is to be a technical and engineering partner that provides customers with expert support throughout all stages of a project, from design and material selection to optimizing solutions on the construction site.

Our priority is to further develop CRH Adria & Western Balkans as a regional platform for construction materials and solutions. We are focused on organic growth, as well as on new acquisitions that will further expand our presence in the markets of Serbia, Croatia, and other Western Balkan countries.



Miroslav Gligorijević

General Manager of TITAN Cement Plant Kosjerić

Half a century of cement production at TITAN Cement Plant Kosjerić has been marked by continuous transformation: from modernizing production processes and improving energy efficiency to investing in technologies that reduce the environmental impact of production. Since becoming part of the TITAN Group in 2002, the Cement Plant has invested almost €100 million in business improvements, including significant investments in environmental protection, safety, capacity expansion and process optimization.

As the cement industry enters a new phase of development, companies face the question of how to respond to increasingly stringent CO emissions requirements while maintaining production competitiveness. CBAM and domestic emissions pricing mechanisms further emphasize the importance of investments in energy efficiency, lower-carbon technologies, and the replacement of fossil fuels.

Decarbonizing the cement industry requires systemic investment and a change in how we manage energy and resources. For TITAN Cement Plant Kosjerić, introducing

alternative fuels is a key step in this process, as it reduces CO emissions and fossil fuel consumption while improving production efficiency and competitiveness.

The project to dose and use solid recovered fuels for co-combustion in the cement kiln at TITAN Cement Plant Kosjerić is part of the long-term strategy to reduce fossil fuel use and CO emissions, as well as the amount of waste sent to landfills.

The first phase aims to achieve a 20–30 percent energy substitution with alternative fuels, in line with kiln capacity and fuel characteristics. These are fuels produced from municipal and non-hazardous industrial waste, including materials that are not suitable for recycling.

This model is not new to TITAN. The share of alternative fuels at TITAN Group plants in Greece was 39.3% in 2024, while the average rate of fossil fuel substitution with alternative fuels in the EU, according to CEM-BUREAU data, is around 58 percent. The European cement industry has used this technology for more than four decades, and TITAN transfers its experience through its plants and local teams. For TITAN Cement Plant Kosjerić, applying this experience is an important step toward reducing its carbon footprint and maintaining production competitiveness.





MORE TRADING, MORE FLEXIBILITY – MEMO'S NEW DIRECTION

The growth of solar and wind power generation is bringing new challenges for the electricity system, while also changing the way the market operates. The introduction of intraday trading, the possibility of negative prices and the development of the guarantees of origin market are all part of the process through which North Macedonia is seeking to bring its market closer to European standards. We discuss these changes and the next steps with Zoran Đordievski, Director General of the National Electricity Market Operator (MEMO).

Q: Mr Đordievski, in May this year, MEMO launched the intraday electricity market. What has its operation so far shown, and to what extent has the introduction of this segment changed the way market participants manage imbalances, particularly given the growing share of solar and other variable renewable energy sources?

A: The introduction of the intraday market represents a significant step in the further development of North Macedonia's electricity sector. This segment officially began operating on 6 May this year, following the successful completion of preparatory

and implementation activities during 2025.

Its operation so far shows that market participants recognise the value of this new market mechanism. We currently have 24 registered participants, which is a good indication that there is interest in the opportunity to adjust their positions throughout the day, as close as possible to the actual delivery time.

This is particularly important given the growing share of renewable energy sources. For these producers, generation depends to a large extent on weather conditions and may

deviate from the quantities planned in advance. With an intraday market in place, participants have the opportunity to respond to such changes in a timely manner and adjust their positions accordingly.

In this way, the market provides them with an additional tool for better managing imbalance risk, as well as for more efficient planning of generation and consumption. Ultimately, this means greater flexibility and more efficient operation of the electricity system.

From our perspective, the development of this segment is gradually bringing the North Macedonian market closer to European market mechanisms. This is also an important prerequisite for its further integration with regional and European markets.

of neighbouring countries and the wider region. The impact of regional flows is inevitably visible in the day-to-day operation of power exchanges and represents the clearest evidence that an electricity exchange cannot function in isolation. Of course, when we talk about linking electricity markets, we primarily mean so-called market coupling, which is a lengthy process closely connected with regulatory and technical-economic adjustments.

In the previous period, we made significant progress in the process of integrating the North Macedonian electricity market with the single European market. National market infrastructure is continuously being upgraded – from the establishment of the day-ahead market, which began



Zoran Đorđievski
Director General of the National Electricity Market Operator (MEMO)



We expect the number of participants and the volume of trading to increase in the coming period, with the intraday market gradually becoming an even more important tool for managing positions and risks in the electricity market..

Q: How close is North Macedonia currently to linking its electricity market with the markets of neighbouring countries and the EU market?

A: The North Macedonian electricity market, like all other electricity markets in the region and Europe, is closely interconnected with the markets

operating on 10 May 2023, through the introduction of the intraday market, to aligning regulations and market rules with European standards.

In July this year, North Macedonia completed the transposition process and entered the verification phase for compliance with the European Electricity Integration Package, conducted by the Energy Community Secretariat and the European Commission. This is an important stage and one of the prerequisites for moving on to concrete activities aimed at market coupling. This is not merely a technical project, but a

process that requires the fulfilment of a range of regulatory, operational and technical conditions.

In this regard, MEMO fully meets the necessary prerequisites and is ready for integration into regional and European market mechanisms.

Successfully completing the verification process will provide the basis for moving on to the next steps in the market-coupling process. This would mean significantly greater integration of the North Macedonian market with neighbouring and European markets, more efficient use of cross-border capacities, greater liquidity and, ultimately, better conditions for market participants, bringing socioeconomic benefits to our economies.

Q: How do you assess price trends on the North Macedonian power exchange this year? The average price on the day-ahead market was EUR 122.55/MWh in January, EUR 89.68/MWh in May and EUR 93.74/MWh in June. What do these trends tell us about the relationship between supply and demand, and to what extent are prices

on MEMO currently aligned with regional markets?

A: Price movements on the North Macedonian day-ahead market this year primarily show that the market is responding to the actual needs of consumers and producers, that is, to the current balance between supply and demand.

The higher average price of EUR 122.55/MWh in January is characteristic of the winter period, when electricity consumption is higher, while at the same time production conditions and the availability of certain generation capacities may be limited. The decline in the average price to EUR 89.68/MWh in May, followed by an increase to EUR 93.74/MWh in June, shows that the balance between supply and demand changes with the seasons. This was preceded by a decline in prices – the average price in April was EUR 87.80/MWh, while in May it was EUR 89.68/MWh. In June, it rose slightly to EUR 93.74/MWh. At the same time, trading volumes increased – from 117.7 GWh in April to 125.2 GWh in May and 137.2 GWh in June.

This price movement clearly shows that the market responds to the real and constantly changing relationship between generation and consumption. Price is not an isolated indicator; rather, it provides a direct signal of the level of consumer demand in a given period and the amount of electricity that producers can and are willing to offer on the market.

Over the past two years, we have recorded continuous growth in trading volumes on the day-ahead market – by 40 percent in 2025 compared with 2024, while in the first half of 2026, trading volumes increased by 23 percent compared with the same period last year.

These figures show that, as liquidity and market activity increase, the price achieved on MEMO is becoming an increasingly relevant signal

of the actual state of the system. It is influenced by several factors – domestic generation, consumption, renewable energy generation, import and export flows and, of course, price movements on regional markets.

From the perspective of regional price dynamics, the North Macedonian electricity market cannot be viewed in isolation, but rather as an integral part of the broader regional and European electricity market. Market participants on MEMO conduct trading activities in conditions of interconnected electricity systems, with cross-border transmission capacities and regional trading flows having a significant impact on the formation of market prices. Therefore, price movements on the North Macedonian organized market to a significant extent follow trends observed in neighbouring and broader European markets.

Nevertheless, when it comes to regional alignment, I would be cautious about saying that the North Macedonian market is already fully aligned with neighbouring markets, since we do not yet have market coupling. Price levels show that the North Macedonian market responds to the same broader regional and European factors, including the impact of the Carbon Border Adjustment Mechanism (CBAM) on electricity prices and flows in the region and Europe.

What is particularly important is that, through the intensive development and enhancement of the day-ahead market, and, since May this year, the operation of the intraday market, we have created the conditions for prices and trading to be formed in a competitive and transparent environment.

Q: You announced that MEMO is considering introducing negative prices in its market. How could their introduction affect renewable energy producers and investments in new solar and wind power plants?

A: Introducing the possibility of negative prices is a natural step in the development of an organized market and in bringing the Macedonian market closer to European market mechanisms. A negative price is, above all, a signal that, during a certain period, electricity supply significantly exceeds demand. This should not be viewed as a problem in itself, but rather as a market signal that helps participants better optimize their generation and consumption decisions.

For renewable energy producers, such prices can provide an additional incentive for more precise planning and active generation management. Particularly for solar power plants, where generation peaks occur during the hours with the most solar energy, periods of increased supply and lower prices may arise. Under such conditions, producers will have greater motivation to invest in flexibility, energy storage and better management of their market positions.

From the perspective of new investments, negative prices do not mean renewable energy development should slow down. On the contrary, they send a signal that the future development of generation capacity should go hand in hand with the development of system flexibility – through battery energy storage systems, demand-side management and better balancing of generation.

Our goal at MEMO is to create a market that realistically reflects supply and demand conditions and provides participants with clear signals. In the long term, such signals are important for creating a more efficient and flexible power system that can accommodate an increasing share of renewable energy sources.

Negative prices have already been applied for an extended period in electricity markets in EU member countries, and more recently in our region as well. They most commonly occur during hours when generation,



particularly from solar and wind power plants, is high while consumption is low.

This is, in fact, an important market signal. When the price falls below zero, the market signals that there is a surplus of electricity at that particular moment and that it is necessary either to reduce generation or increase consumption, i.e., to activate flexibility and storage.

From this perspective, I believe that negative prices are a useful instrument if they are part of a well-organized and competitive market. They should not be viewed as a threat to renewable energy sources, but rather as a signal that, as solar and wind capacities increase, we must simultaneously develop energy storage, flexible consumption, grid infrastructure, and better generation management.

European experience shows that negative prices are already becoming an increasingly common part of market dynamics. Therefore, the Macedonian market also needs a mechanism that realistically reflects supply and demand conditions.

The trend we should establish to ensure the stability of the power system is not only to produce more

green energy, but also to create a system that can efficiently accommodate, store, and use it when needed.

Q: MEMO has announced the introduction of auctions for Guarantees of Origin following the launch of their issuance in 2025, and this year MEMO became a full member of AIB. What will the introduction of auctions in the Guarantees of Origin market change in North Macedonia?

A: The introduction of auctions for Guarantees of Origin represents the next logical step in the development of this market. By establishing the Registry in 2025, we created the foundation for the issuance, transfer, cancellation and management of Guarantees of Origin, while this year, through MEMO's full membership in the Association of Issuing Bodies (AIB), we took another significant step towards integrating them into the European system.

What we aim to achieve by introducing auctions is, above all, greater transparency and market-based price formation for Guarantees of Origin. Instead of their value being determined through limited or bilateral arrangements, the auction

mechanism will enable supply and demand to directly influence the price.

This is also important for renewable energy producers. A Guarantee of Origin certifies that a certain amount of electricity has been generated from a renewable source, and as the market develops, this certificate also acquires a tangible economic value. For producers, this creates an additional opportunity to monetize the green component of the electricity they generate.

For suppliers and companies, on the other hand, particularly those that need to demonstrate the use of electricity from renewable sources, auctions will provide a clearer, more transparent and more competitive way of procuring these certificates. This is especially important for companies operating in European markets and facing increasingly stringent obligations and requirements related to decarbonization, sustainable business practices and reducing their carbon footprint.

It is important to emphasize that this is not merely a new trading instrument, but part of a broader process of creating a modern green energy market in our country. Since April 2025, more than 500,000 Guarantees of Origin have been issued to date, demonstrating that interest in this segment is growing.

We expect that with the introduction of auctions, further integration into the AIB network and efforts to have our Guarantees of Origin recognized in the EU, the market will become even more dynamic, liquidity will increase, and a clear market benchmark for the value of green energy will gradually be established. In this way, Guarantees of Origin will evolve from an administrative instrument into a genuine market product, while also providing an additional incentive for the development of renewable energy sources and the green transition.

Interview by Milena Maglovski



WHEN A BUILDING BEGINS TO UNDERSTAND ITSELF

Buildings are a key part of the energy transition, accounting for around 30 percent of global energy consumption. Their performance depends not only on the quality of façades and windows or the efficiency of individual devices, but increasingly on how lighting, heating, ventilation, air conditioning, and energy metering systems communicate with one another and operate as an integrated whole.

Opportunities for savings are often hidden in the day-to-day operation of a building – in an empty meeting room being heated as if it were full, lights remaining on when there is sufficient daylight, or ventilation

operating at full capacity regardless of the number of occupants. Seemingly small and almost imperceptible, such losses accumulate over time, becoming a significant energy and financial cost. Making them visible is the first step towards more precise and responsible energy management.

The Building as a Whole, Not a Sum of Systems

ABB Ability™ BuildingPro is based on the idea that a building is an interconnected energy and functional ecosystem. It is an open, cyber-secure platform that brings together different technical systems and turns their data into clear, actionable

information for day-to-day facility management.

“Buildings are becoming increasingly connected and data-rich, yet many owners and operators still face the challenge of turning that data into consistent performance across their entire portfolio. In practice, we rarely encounter a building whose systems were installed at the same time and speak the same technical language. Lighting, HVAC, and energy metering therefore often operate independently. The problem is not a lack of data, but the fact that the data is not connected.

With the launch of the ABB Ability™ BuildingPro Suites, we have

taken an important step toward the future of intelligent, energy-efficient buildings. The platform turns building data into concrete actions that deliver energy savings, greater sustainability, and a better user experience, with the flexibility to apply it to anything from a single building to an entire portfolio.

BuildingPro Edge acts as a translator: it connects KNX, BACnet, Modbus, LonWorks, and MQTT protocols, while openBOS® provides data context. Our vision is for BuildingPro to be present in an increasing number of new and existing buildings across Serbia – from office buildings and hotels to hospitals, public institutions and industrial facilities.

I would like energy efficiency to be something we address not only during the design or renovation phase, but every day. That is when a smart building will no longer be a privilege of the most advanced facilities, but an expected standard,” says Vanja Dugošija, Sales Manager for Buildings, Infrastructure and Transportation at ABB Serbia.

When KNX and BMS Work as One

The practical value of connectivity can be seen in the example of ABB i-bus® KNX and ABB Cylon® BMS solutions. KNX manages lighting, shading and room temperature, while ABB Cylon® focuses on HVAC systems.

On a sunny winter day, the sun may already be warming an office, yet the heating system can continue operating according to its predefined settings while the lighting remains at full output. A connected system takes daylight levels, temperature, blind position, and occupancy into account.

Once employees leave, the space switches to a more efficient operating mode: it maintains comfort while reducing unnecessary energy use. In hotels, the system coordinates operation with room occupancy,

while in hospitals it adapts to the requirements of different zones. Efficiency and comfort are not conflicting objectives – effective management improves both.

When Data Provides a Warning Before a Failure

Through a web browser, BuildingPro Vision displays floor plans, equipment status, alarms, schedules and trends. This enables technical teams to identify not only that a problem exists, but also where to look for its cause.

If a fan starts consuming more energy without any change in its operating mode, the trend data may point to a clogged filter or another irregularity. If a space fails to reach the set temperature, a combined view of system operation and measured values can help identify the problem before a more serious failure occurs.

Maintenance thus becomes less reactive and more predictive. Schedules can be configured for an entire building, floor or room and adapted to working hours, weekends and holidays. BuildingPro Editor enables system integrators to configure protocols and connect data to equipment, while KNX Space Commissioning provides a graphical way to place KNX devices on floor plans.

Alongside promoting the BuildingPro platform, ABB Serbia is also investing in developing a local ecosystem of experts and partners that can support the design, integration, and implementation of solutions. This approach enables more efficient project delivery and ensures that solutions can be adapted to existing infrastructure and users’ operational requirements.

From a Single Building to an Entire Portfolio

BuildingPro Vision is designed for day-to-day monitoring, while BuildingPro Suites takes data to the level of an individual building or a group of

buildings. It transforms information from automation, HVAC, energy, IT, OT, and IoT systems into dashboards, analytical insights, and predictive tools.

A retail chain owner can compare the energy consumption of similar stores and identify a facility that is consuming more than expected. The reason may not be outdated equipment, but a different operating schedule or poorly configured settings. Best practices identified in one building can then be transferred to others, while reliable data makes it easier to track sustainability targets and prepare ESG reports.

The open architecture also protects the investment’s long-term value: existing systems can connect to future applications rather than creating another technology silo. Access is based on user roles, applications are digitally signed, data storage is encrypted, and the owner retains control over the data.

A Smart Building Tailored to the User

Every building has its own purpose, infrastructure, and usage patterns – there is no single configuration that works for everyone. The best measure of success is therefore not the number of sensors or dashboards, but what users barely notice: a comfortable environment, good air quality, reliable system operation, and less wasted energy.

That is when technology truly fulfills its purpose – working in the background while the building better serves both its occupants and the environment.

www.abb.rs



✉ Bulevar Peka Dapčevića 13, Beograd
✉ rs-office@abb.com
🌐 www.abb.com

FIGHTING DROUGHT WITH SUNSHINE:
HOW SOLAR POWER PLANTS
TAKE OVER WHEN RIVERS
RUN DRY





During hot summer days, energy systems face a major challenge: river levels fall, hydropower plants generate less electricity, and the cooling systems of thermal and nuclear power plants are left without sufficient water. Fortunately, one energy source has proven considerably more resilient to harsh summer conditions – solar energy. We spoke with Igor Todorović, Regional Director for Southeastern Serbia at MT-KOMEX, about why extreme heat is nevertheless not an ally of solar panels, how power plants are designed to withstand decades of heatwaves, and why southern Serbia, despite abundant sunshine, is still waiting for its solar energy sector to gain real momentum.

Q: We are increasingly facing prolonged periods of drought, when hydropower plants cannot generate sufficient electricity due to low water levels, while nuclear power plants may also face restrictions because of the availability of water for reactor cooling. How important can solar power plants be in such situations?

A: Climate change is making it increasingly clear that the energy system must be diversified and adapted to different weather conditions. During prolonged droughts, hydropower

plants often see reduced output because of low water levels, while some thermal and nuclear power plants may face restrictions due to insufficient cooling water or excessively high watercourse temperatures.

Under such circumstances, solar power plants play an extremely important role. What is particularly significant is that periods of the highest solar irradiation often coincide

IGOR TODOROVIĆ holds a Master's degree in Electrical Engineering from the Faculty of Electronic Engineering at the University of Niš. He is an energy sector expert with several years of experience in the field of renewable energy sources. He currently serves as Regional Director for Southeastern Serbia at MT-KOMEX, a leader in the fields of renewable energy and electromobility.



During prolonged droughts, hydropower plants often see reduced output because of low water levels, while some thermal and nuclear power plants may face restrictions due to insufficient cooling water or excessively high watercourse temperatures

with drought and increased electricity consumption from cooling systems. In this way, solar power plants can help stabilize the electricity system precisely when certain traditional energy sources are under the greatest pressure. It should be noted here that Serbia currently has around 235 MW of installed solar power capacity, while neighboring countries have more than 30 times as much – Romania, for example, has 8,500 MW and Bulgaria 6,800 MW. The situation in Serbia is not the result of weak interest from individual and corporate investors, but rather of the slow and complicated process of obtaining the necessary permits.

Of course, solar energy alone cannot replace all other energy sources, but it represents an important part of the energy mix that increases system resilience. Combined with battery energy storage, flexible generation capacity, and appropriate grid infrastructure, solar energy becomes a key tool for maintaining energy security under changing climate conditions.

Q: How Do Extremely High Temperatures Affect the Performance of Solar Panels?

A: It is often intuitively assumed that more sunshine and higher temperatures mean greater electricity generation, but how do solar panels actually perform when air temperatures exceed 35°C or 40°C? What temperature is most favorable for their operation, and by how much can output decrease during extremely hot days?

– This is one of the most common misconceptions when we talk about solar power plants. Solar panels generate electricity thanks to solar radiation, not high temperatures. In fact, higher panel temperatures reduce efficiency.

Standard testing conditions specify a cell temperature of 25°C. However, on summer days when air temperatures reach 35°C or 40°C, the

panel temperature can exceed 60°C or even 70°C. Under these conditions, cell voltage decreases, reducing overall output.

For modern photovoltaic modules, the power temperature coefficient is most commonly between -0.3 percent and -0.4 percent per degree Celsius above the reference temperature. This means that on very hot days, instantaneous power output can be 10 to 15 percent lower compared with ideal temperature conditions.



On the other hand, solar radiation remains high precisely on such days, meaning that total daily output remains significant. Therefore, we can say that solar power plants still achieve very good results during the summer, but not because of high temperatures – rather, because of the intensity of solar radiation.

Q: When designing a solar power plant for an area that will increasingly be exposed to heatwaves, which parameters do you pay particular attention to? Does the design of solar power plants today differ from the way they were designed when extreme temperatures were not as frequent?

A: Yes, the design approach today differs significantly from that of ten or fifteen years ago. Climate data used for site analysis no longer rely solely on historical averages, but also include assessments of increasingly frequent extreme weather events.

When designing a plant, we pay particular attention to the site's temperature profiles, selecting modules with more favorable temperature coefficients, spacing rows of panels appropriately, and ensuring

good natural ventilation to support cooling.

In addition, we carefully size inverters, substations, cable systems, and other equipment whose operation may be sensitive to high temperatures. We also analyze scenarios involving prolonged heatwaves to ensure the power plant maintains its planned performance throughout its service life.

In other words, climate resilience has become an important criterion in modern energy facility design.

Q: An increasing number of large-scale solar power plants are being combined with battery energy storage



systems (BESS). How do battery systems perform during prolonged periods of high temperatures, and how much can heat affect their performance, available capacity, and service life?

A: Battery energy storage systems represent a key technology for the further development of renewable energy sources, but at the same time, they are highly sensitive to operating temperature conditions.

High temperatures can temporarily increase electrochemical activity in battery cells, but in the long term they accelerate aging and degradation. If batteries operate for extended periods at temperatures significantly above their designed operating values, this can lead to reduced available capacity, faster performance degradation, and a shortened system lifespan.

For this reason, modern BESS systems are equipped with advanced management and active cooling systems that maintain temperatures within the optimal operating range. In large-scale projects today, considerable attention is paid specifically to thermal management, as it directly affects the economic viability and long-term reliability of the investment.

We can say that a battery system's successful operation during periods of extreme heat largely depends on

design quality, the cooling system, and battery management.

Q: Southern Serbia is among the sunniest parts of the country. From a designer's perspective, what is the potential of southern Serbia for the development of large-scale solar power plants, and what are the main advantages and limitations of the area today?

A: Southern Serbia is certainly one of the most promising areas for the development of large-scale solar power plants. The region benefits from much higher solar radiation than most of the country, which directly contributes to higher annual electricity generation and better project economics.

Solar power plant development in southern Serbia also faces certain limitations. This part of the country is characterized by a high degree of land fragmentation, which often represents a significant challenge during the early stages of project development. Acquiring or consolidating land can be lengthy and administratively demanding, particularly when property and legal matters must be resolved with many owners. In addition, obtaining the necessary documentation and meeting all regulatory requirements often requires additional time and resources. Nevertheless, with thorough project preparation and good

cooperation with local communities, these challenges can be overcome, and they do not change the fact that southern Serbia is one of the most promising areas for solar energy development in the region.

However, the biggest challenges today are not primarily related to project development and construction, but rather to the possibilities for connection to the electricity grid. As in many European countries, the development of renewable energy sources increasingly depends on grid capacity, the ability to balance the system, and how quickly necessary infrastructure investments can be implemented.

That is why future development will depend not only on the number of new solar power plants, but also on the parallel development of the transmission and distribution grids, as well as energy storage systems.

Q: MT-KOMEX is developing several projects in southern Serbia. Which are the most significant projects you are currently developing in this area?

A: MT-KOMEX continuously develops and implements solar energy projects across Serbia, with southern Serbia also standing out as a region with highly favorable solar irradiation levels.

We are currently working on the development of several solar power plant and battery energy storage projects. Our focus is not only on the construction of generation capacity, but also on the integration of advanced technological solutions, including sophisticated management systems, energy storage capabilities and optimization of grid connections.

We pay particular attention to projects that can contribute to Serbia's energy transition and increase the share of renewable energy sources, while ensuring a high level of technical reliability and compliance with the highest industry standards.

Interview by Milena Maglovski



LUXOR SOLAR RESPONDS TO MARKET NEEDS WITH A CLEARER PORTFOLIO

The European solar market has undergone major changes in recent years. Financial pressures, falling module prices, competition from Asia, and growing demand for renewable energy sources have changed the way investors choose equipment. In such an environment, German manufacturer Luxor

Solar has reorganized its portfolio into three clearly defined segments — ECO LINE Classic, ECO LINE Pro, and ECO LINE Prime.

The reasons behind this change, the state of the market, and the direction the solar industry is taking were discussed by Nino Sijerić, the company's Business Development Manager.

As he explains, the aim of the new segmentation was not merely to change product names, but to achieve clearer positioning in relation to market needs.

– We noticed that there are three most common profiles of needs. One is investment optimization, meaning the best possible price and a cost-efficient model. The second



is longevity and security, while the third is the highest yield per square meter. We felt that our portfolio may not have been segmented clearly enough, which meant that people could not immediately recognize where they fit, so we wanted to simplify that – says Sijerić.

Thus, ECO LINE Classic is intended for projects where the initial investment and a competitive price are key; ECO LINE Pro focuses on longevity and mechanical durability, while ECO LINE Prime has been developed for maximum efficiency and uses back-contact technology.

This division comes at a time when the solar sector is no longer a homogeneous market. While only a few years ago almost all investors primarily looked for the lowest price, today their needs differ significantly. Commercial facilities seek an optimal balance between power and available space. At the same time, investors in large solar parks pay particular attention to the long-term reliability of equipment and the possibility of financing projects under more favorable conditions.

– Classic and Pro use TOPCon technology, while Prime is based on back-contact technology. That is

Companies exporting to the European Union must prove that they use renewable energy sources, so both small and large producers are turning to solar energy as the fastest and simplest solution, he states

the main difference, the interviewee states.

Along with the new segmentation, the approach to warranties has also changed. According to Sijerić, the company has adapted its offer to market circumstances.

– We realized that competitors in this segment generally offer a 15-year product warranty, which is why Classic, as one of our segments, is positioned similarly. But our Pro remains the product we are recognized for — with a 30-year product warranty and a 30-year performance warranty. In doing so, we also wanted to show why people ultimately pay more for Luxor – explains Sijerić.

The issue of warranties has, in recent years, become a key factor in equipment selection. Since solar power plants are investments planned for two to three decades, investors are increasingly assessing not

only the technical characteristics of modules but also the manufacturer's financial stability, the availability of service support, and legal certainty in the event of claims. This is why a warranty today represents much more than a marketing tool – it is becoming an indicator of a manufacturer's confidence in its own product.'

There are also differences in module performance. According to him, Classic currently reaches a power output of around 620 W, Pro 630 W, while Prime, with back-contact technology, reaches 655 W, with further efficiency gains expected.

Speaking about the regional market, Sijerić assesses that the Balkans is going through a phase of maturation.

– In the Balkans, we have gone through a typical phase of market maturation. People often look at a solar panel only from the outside — as

a glass surface within a frame — and assume that all products are more or less the same, so they make decisions solely based on price. However, the market is slowly but surely learning from mistakes, and the focus will increasingly shift from price alone to longevity and stable kilowatt-hour production – Sijerić explains.

According to him, long-term security of energy production will become one of the key criteria for investors and financial institutions.

He recalls that the solar market has already gone through two major cycles, especially over the past two years, when the sharp decline in module prices pushed many manufacturers into financial difficulties.

– It was difficult both for manufacturers and end users because the market was changing rapidly. When I started preparing my first offers in 2009, the price was around 3 euros per watt-peak, while today we are talking about 10 to 15 cents per watt-peak. Nevertheless, even back then, projects were profitable. That is why I believe the next phase of the market will not be only about the lowest price but also about trust, longevity, and secure revenues from electricity generation, Sijerić further states.

The dramatic decline in equipment prices has made solar energy accessible to a much wider range of users than before. Projects that were reserved for large investors a decade ago are now economically viable for factories, logistics centers, agricultural holdings, and even smaller business facilities. This is precisely why the market is entering a new phase of development in which competition will be based less on the availability of the technology itself and more on the quality of execution, long-term performance, and additional services that manufacturers can offer.

One important fact is that financial institutions today primarily

pursue projects that can secure stable, long-term revenues, which is why equipment durability is gaining importance.

Speaking about technological development, Sijerić points out that the company carefully monitors new technologies, but the market must first confirm their reliability.

– As far as our segmentation is concerned, there is no winner. Each product has its own position in the market, depending on the client's needs. Over the past four months, the ratio between the Classic and Pro segments has been practically 50-50, he says.

In addition to standard products, Luxor Solar is also developing specialized solutions for specific applications. These include modules with anti-reflective glass, intended for locations where glare is an issue, as well as façade modules for integration into buildings.

– We have the ECO LINE Pro Non-Reflect module with glass that does not reflect light, but rather “captures” it, which is of great importance for certain projects. We are also developing façade modules with thicker glass and greater weight for integration into buildings – the interviewee explains.

He particularly emphasizes the potential of façade photovoltaic systems, which he believes are still insufficiently represented in public discussion.

– Façades and façade modules are a topic that is still discussed too little. In winter, façades can generate more energy than rooftop power plants. What is needed is simply more communication with clients and the market, because quality will certainly prevail in the end – Sijerić believes.

Changes, he says, are also becoming visible in the region's industry, particularly due to the European CBAM mechanism, which requires exporters to prove their

carbon footprint and the use of renewable energy sources.

– In Bosnia and Herzegovina, we are currently seeing strong demand precisely because of CBAM. Companies exporting to the European Union must prove that they use renewable energy sources, so both small and large producers are turning to solar energy as the fastest and simplest solution, he states.

Asked how a European company survives in competition with Chinese manufacturers, he replies that today it is no longer decisive where a product is manufactured, but how it is manufactured.

– Our business model is similar to that of Apple. We develop solutions and control quality, while production takes place in China. Therefore, what matters is not where something is produced, but how it is produced, which components are used, and what level of security the client receives, says Sijerić.

He adds that legal certainty is becoming an increasingly important factor for buyers.

– Our warranty is in Stuttgart; our headquarters are in Stuttgart; therefore, a client in Europe knows where they can exercise their rights in any case. This is becoming increasingly important to people today – the interviewee concludes.

All in all, if forecasts regarding the growth in electricity demand and the further expansion of renewable energy sources prove true, in the coming years, the solar industry will compete less and less solely on price and increasingly on reliability, quality, and long-term performance. It is precisely on these principles that Luxor Solar has built its approach from the very beginning, striving to offer the market clearer solutions tailored to users' different investment and energy goals, as reflected in the new segmentation of the ECO LINE portfolio.

Prepared by Milica Vučković



Storage powered by Europe

New: Fronius Reserva Pro.

The high-voltage battery Made in Europe* that can be paralleled up to 128 kWh. *For maximum security, cells and Modules are Made in Europe - data is stored and processed in Europe only.

www.fronius.com/solar-energy



FROM A REGULATORY OBLIGATION TO A QUESTION OF COMPETITIVENESS: WHAT DOES CBAM BRING TO INDUSTRY?

With the introduction of the Carbon Border Adjustment Mechanism (CBAM), European climate policy is entering a new phase with direct implications for industry in the Western Balkans as well. For companies, the question is no longer simply how to calculate and report embodied emissions, but how to manage carbon costs and maintain competitiveness in the European Union market. We spoke with Armin Hodžić, Director of the Energy Sector at the Chamber of Economy of the Federation of Bosnia and Herzegovina, about domestic industry's readiness, the biggest challenges in implementing CBAM, and the long-term implications of this mechanism for Bosnia and Herzegovina's economy.

Q: CBAM entered its definitive, financial phase this year. How would you assess the current level of industry readiness in the Western Balkans, particularly in Serbia and Bosnia and Herzegovina? Do companies already have systems in place to measure, monitor, and verify embodied emissions, and how prepared are they to incorporate the new requirements into their day-to-day operations?

A: I would like to emphasize something very important at the outset: industry in Serbia and Bosnia and Herzegovina is incomparably more prepared today than it was in 2023, but I would not say that the region as a whole is ready for CBAM at the level it will need to reach in two or three years. There is a major difference between large, export-oriented companies and medium-sized and smaller suppliers. If I had to give a single assessment, I would say Western Balkan industry readiness is currently low to moderate but highly uneven.

Serbia is somewhat further ahead in terms of institutional and corporate understanding of CBAM, due to the size of its industrial base and the structure of its exports to the EU,

while in Bosnia and Herzegovina readiness is more clearly concentrated among several large exporters in the steel, aluminum, cement and electricity sectors. However, it is important to distinguish between “a company is familiar with CBAM” and “a company has a functional CBAM MRV system capable of producing data ready for verification”. These are two completely different things.

If we are talking about readiness, I would assess Serbia’s readiness as somewhat higher than Bosnia and Herzegovina’s, primarily because it has several large industrial systems that have been directly exposed to European buyers’ requirements for some time. In particular, we are talking about steel, aluminum, cement, fertilizers, and electricity. These are precisely the sectors currently covered by CBAM.

Q: What are currently the biggest challenges and uncertainties facing industry representatives in implementing CBAM? Are the main challenges the technical requirements for calculating and reporting emissions, or are companies still unclear about the financial implications, calculation methodology, and the responsibilities of different participants in the value chain?

A: It is particularly important to emphasize that today we can no longer speak simply of a “lack of information”. After almost three years of the transitional period, the largest companies should already know the basic principles of CBAM. What now distinguishes prepared companies from those that are not is their ability to translate those rules into a specific product, a specific price, and a specific responsibility – in other words, how to translate CBAM from a regulatory requirement into an everyday business decision.

During the transitional period, companies primarily learned how to collect and report data on embodied

emissions. From 2026 onwards, the situation is significantly different: CBAM has a financial dimension, and the quality of emissions data is beginning to directly affect product competitiveness in the EU market.

I therefore divide the problems companies face today into four groups: methodological, data and technical, financial, and organizational and legal.

Even today, one question I often receive is: “What exactly are we calculating?” At first glance, the formula appears simple, but in reality many variables must be determined: whether a product falls under CBAM, which CN code applies, which production processes to include, what constitutes direct emissions, and which precursors are incorporated into the product.

This brings us to the biggest paradox: a company may know exactly how much total CO₂ it has emitted, but not how much CBAM emissions are attributable to one ton of a specific product. Companies must determine how emissions are attributed to specific production processes and products under the relevant CBAM methodology.

The second problem concerns precursors, or what companies most often refer to as “hidden” emissions. This is particularly important for the steel and aluminum industries. If a company uses a material in its production process that is itself CBAM-relevant or carries embodied emissions, it must understand how the emissions of that precursor are incorporated into the product’s total emissions. If the first supplier cannot provide reliable data on embodied emissions, the problem is passed downstream, and this is precisely where CBAM begins to change the traditional buyer-supplier relationship. For the first time, alongside a product’s price, the carbon intensity of the product being purchased becomes a key consideration.



Armin Hodžić

Director of the Energy Sector at the Chamber of Economy of the Federation of Bosnia and Herzegovina

When I talk to companies, every company wants to use actual emissions because it believes it has more efficient production than the average. But it must then demonstrate that the reported emissions reflect its installation’s actual emissions and how that figure was calculated. If sufficiently high-quality data are not available, a situation may arise in which a more conservative value – a default value – is used, which can result in a higher CBAM cost.

The next question that arises is how much CBAM will actually cost our company. Of course, this cannot be answered simply, but it is enough to emphasize that CBAM obligations depend on the specific goods, emissions, rules, and period, as well as many other factors.

Then we come to the question of all questions: who actually “pays” CBAM? The producer in Bosnia and Herzegovina or Serbia does not have the formal financial obligation towards the EU. The obligation lies with the EU importer, that is, the authorized CBAM declarant. But this does not mean that the producer

in Bosnia and Herzegovina or Serbia does not face a financial problem. The cost will very likely be partially passed through the market via price negotiations, reduced margins, supplier changes, demands for lower emissions, long-term contracts, investments in decarbonization, or a combination of all of these.

Do not shift CBAM responsibility onto your EU buyer. The buyer has its own regulatory obligation, but you are responsible for the quality of the data you provide. In this way, CBAM becomes a competitive cost for the producer, even though the producer is not formally the one purchasing the certificates. This is why the concept of a “CBAM-adjusted product price” – that is, the price of a product considered together with its carbon intensity – will increasingly emerge in the coming years.

One of the biggest mistakes is still viewing CBAM as a task someone within the company performs once a quarter or once a year, essentially by preparing a CBAM report. This is no longer an adequate way of thinking, given that “thinking about” CBAM must be integrated into the business. Procurement must know the emissions associated with relevant raw materials and precursors, energy management must have reliable consumption data, sales must understand how emissions intensity affects price, and management must decide whether an investment in decarbonization is economically justified. Only then does CBAM become part of company management.

Ultimately, I would say the biggest challenge is turning a regulatory requirement into a reliable business system. A company must know not only how much CO₂ it emits, but also how much is attributable to its specific product, how reliable that data is, who uses it within the value chain, how much CBAM could cost its buyer, and, ultimately, what it can do to reduce that cost.

That is why I would say that industry is now moving from the “CBAM compliance” phase to the “CBAM competitiveness” phase. Those who remain focused solely on reporting will meet the regulatory minimum. Those who connect CBAM data with energy, production, procurement, finance, and investments in decarbonization will turn CBAM into a tool for maintaining competitiveness.

Q: What could be the long-term implications of CBAM for domestic industry and the economy of Bosnia and Herzegovina? Will the mechanism ultimately encourage investment in cleaner technologies and the energy transition, or is there a risk that high-emitting companies will lose part of the EU market and that production and investment will shift outside the EU?

A: I would frame this as the most important question of the entire set, because it is no longer simply a matter of how companies will fulfill their CBAM obligations, but of what kind of industrial structure Bosnia and Herzegovina will have in 10–15 years.

My basic view is that CBAM alone will not determine whether Bosnia and Herzegovina’s industry will decline or modernize. It will reinforce the existing differences between companies that are technologically and energy efficient and those that are not. The outcome will largely depend on whether Bosnia and Herzegovina treats CBAM as a trade issue to be mitigated or as a signal to accelerate industrial, energy, and investment transformation.

Here, too, I would be particularly cautious about the notion of



“relocating production outside the EU”. For Bosnia and Herzegovina, something else is more important: the risk is not primarily that production from Bosnia and Herzegovina will move outside the EU – it is already outside the EU. The risk is that Bosnia and Herzegovina will lose part of the EU market and that new investments in energy-intensive production will be directed towards other locations that can offer a lower overall carbon-adjusted cost. On the other hand, Bosnia and Herzegovina could become an attractive location for certain low-carbon industries if it uses its energy resources,

geographical position, and existing industrial base.

The long-term implications of CBAM for Bosnia and Herzegovina will not be determined by the mechanism itself, but primarily by our response. CBAM represents a real risk for Bosnia and Herzegovina because our economy is strongly linked to the EU market, while a significant share of exports consists of aluminum, steel, cement, and electricity. The IMF currently estimates that, without appropriate domestic policies, CBAM could reduce Bosnia and Herzegovina’s real GDP by around 0.4 to 0.7 percent by 2035. This shows that

The biggest mistake would be to spend the next several years trying only to reduce the immediate cost of CBAM



CBAM should be treated as an economic and industrial policy matter, rather than simply a matter of company reporting.

At the same time, CBAM could be one of the strongest external incentives Bosnia and Herzegovina has received to modernize its industry. If companies invest in energy efficiency, renewable energy, modern equipment, process electrification, and better emissions management, they are not only reducing CO₂. They are also reducing energy consumption, increasing productivity, lowering future carbon costs and strengthening the security of access to the European market. That is why I do not expect the long-term effect to be simply that “CBAM will shut down Bosnia and Herzegovina’s industry”. It is more realistic that CBAM will create a selection process. Companies with high emissions intensity that do not invest in modernization will face increasing pressure. Companies that manage to produce the same product with less CO₂ will be in a stronger position. And for Bosnia and Herzegovina, the ability to attract new investment in low-carbon production will be particularly important.

In my view, the biggest mistake would be to spend the next several years trying only to reduce the immediate cost of CBAM. We should use it as a signal for investments that will make that cost smaller in the long term or eliminate it altogether. If we succeed, CBAM can be a painful short-term pressure but a positive long-term catalyst. If we fail, the same mechanism could accelerate the loss of competitiveness of part of our industry.

In other words, the question is not whether CBAM will change Bosnia and Herzegovina. It will. The only question is whether it will change us in the direction of a decarbonized, energy-efficient and more competitive industry – or towards a gradual loss of industrial competitiveness.

Interview by Milena Maglovski



NEW EUROPEAN UNION DIRECTIVES AND THE FUTURE OF ENERGY RENOVATION OF BUILDINGS IN SERBIA

While Serbia has seen the emergence of the first organized subsidy and loan programs for building energy renovation in recent years, the EU adopted the new Energy Performance of Buildings Directive (EPBD) in spring 2024. Under this directive, European Union member states will in the future be required to renovate between two and three percent of existing buildings every year

in order to improve the energy efficiency of the building stock.

The European Commission clearly emphasizes that, in addition to helping residents navigate the energy renovation processes of the buildings in which they live more easily, member states will also have to develop mechanisms for financing, training, and attracting a larger number of qualified workers and contractors. Serbia and other Balkan

countries will need to develop their own strategies and mechanisms to undergo a similar energy transition of the building stock, with both financial mechanisms and programs to develop and attract educated and qualified contractors to carry out this large-scale energy renovation work.

In Serbia, the most important and largest-scale energy renovation subsidy program is the one that the EBRD has been developing for several

years together with the Ministry of Mining and Energy – the Public ESCO Project. Because of the crisis related to sanctions against NIS, Serbia removed borrowing from the EBRD from its budget last November, but reinstated it through the budget revision a week ago. Specifically, the €50 million EBRD loan, together with state investment through district heating companies, will enable major works in 14 cities:

Public ESCO Project

At present, around 600 multi-story buildings connected to district heating systems in these cities have qualified for the first phase of the project. The project has the ambitious goal of financing the energy renovation of buildings connected to district heating systems through heating bills over a period of no more than ten years. In practice, heating bills would remain the same as before, while the savings in heating costs achieved by renovated buildings would be used to repay the investment in the building's energy renovation. Instead of reducing heating bills after the renovation, the difference in the cost would remain with the district heating companies until the funds allocated to finance the renovation were repaid. Because the project criteria prioritized the least energy-efficient buildings, most selected buildings will repay their share of the investment through heating bills over five to seven years, after which their heating bills will be significantly reduced.

At the same time, a smaller, more narrowly focused program provides subsidies to individual households for energy renovations to their houses and apartments. This activity was launched back in 2021 by the Swiss RELOF project (Local Finance Reform) together with the Ministry of Mining and Energy, and has since developed into the current World Bank SURCE program, which is in its final phase:

Clean Energy and Energy Efficiency for Citizens Project (SURCE)

Through this program, energy renovation and energy-saving measures are subsidized in most cities and municipalities in Serbia, but for individual households rather than collective housing. House owners, as well as individual apartment owners in multi-family residential buildings, can receive subsidies covering more than half the cost of renovating their homes. House and apartment owners can use the subsidies to invest in new exterior windows and doors, façade thermal insulation, solar panels on roofs or façades, and heat pumps. The plan is to renovate the energy performance of up to 50,000 households by the end of 2027.

In light of these changes in the housing construction market, the introduction of energy performance certificates for old and new buildings, and the large-scale energy renovation of existing buildings, the Association of Mineral Wool of Serbia – MIVUS is warning of potential mistakes that could be made in the process of improving the energy efficiency of existing buildings.

Potential buyers of new properties may notice that high-rise buildings are now constructed exclusively with façades insulated with mineral wool, due to fire protection requirements for property and residents' lives. However, for lower buildings and for renovating existing buildings, mineral wool thermal insulation also offers benefits that other materials cannot provide. Let us not forget that polystyrene on façades exposed to sunlight can have a limited service life – there is a possibility that it may melt at high temperatures and gradually disappear from the façade layers.

The fire at Grenfell Tower in London in 2017 claimed more than 70 lives. Do we have to wait for such a case, or can we act preventively? Mineral wool fire barriers on façades

and in roof insulation reduce damage to the building and the risk to residents. For buildings of certain heights, existing regulations require fire barriers, but these requirements are not always met.

The Association of Mineral Wool Producers of Serbia (MIVUS) educates the public about the need to insulate façades and attics with non-combustible materials or to install mineral wool fire barriers on façades when the primary insulation material of the building envelope is combustible.

The Rulebook on Technical Requirements for Fire Safety of External Walls of Buildings defines the use of non-combustible materials when constructing new buildings or renovating existing ones. MIVUS calls for compliance with existing regulations to protect both lives and property. A well-insulated and well-wrapped building also adds value for owners by increasing the price per square meter, while buildings insulated with non-combustible materials will be even more valuable.

In any case, the Balkan region is entering a period of several decades during which almost all existing buildings will undergo changes through energy renovation. Therefore, it is necessary to plan in advance for all aspects of these construction works, rather than focusing only on completing energy renovation projects as cheaply as possible.

MIVUS





THE REGION HAS MOVED BEYOND THE AMBITION PHASE – NOW IT IS TIME FOR IMPLEMENTATION

The energy transition in the Western Balkans is entering a new phase in which it is no longer enough to talk about gigawatts of new renewable energy capacity. The focus is increasingly shifting towards what is needed to turn announced projects into actual generation capacity – from the development of the electricity grid and energy storage, through new market models and cross-border interconnections, to attracting capital and securing long-term agreements for electricity offtake.

In an interview with Energy Portal, Inesa Shahnazarova, founder and CEO of Invest In Network and founder of the regional Energy Week Western Balkans conference, discusses the changes shaping the region's energy sector, investment opportunities, the increasingly important role of battery storage systems and hybrid projects, as well as how CBAM is changing the economic logic of the energy market.

**Corporate PPAs
are the next piece
of the puzzle,
particularly because
CBAM is changing
the way energy-
intensive industries
view costs and
competitiveness**

Q: The Target of 20 GW of New Renewable Energy Capacity by 2040 Is Often Cited as the Region's Ambition – Realistically Speaking, What Is the Biggest Obstacle Between That Ambition and Its Achievement?

A: I actually believe that 20 GW is an achievable target. The biggest risk is not a lack of projects or capital. Projects are already in preparation, and when well-structured opportunities come to market, investor interest is very clear. The real question is how much of that pipeline can move from announced projects to actual electricity generation. A few years ago, permitting would probably have been the obvious answer. Today, I would say that the bottleneck is increasingly the power system itself. Grid connection capacity, the speed and transparency of grid connection procedures, grid congestion, system balancing and the ability of national systems to accommodate large volumes of variable renewable generation are becoming key factors. The economics of projects are also changing. It is no longer enough simply to build another solar or wind power plant. Investors and developers need to think about energy storage, curtailment, negative electricity prices, market-based power sales and who will ultimately buy that electricity. This is why the next phase of the energy transition is much more complex than the first. CBAM has added further urgency. Since the start of its definitive implementation in January 2026, the region has been seeing in real time what happens when electricity markets remain outside the EU framework. In the first quarter alone, commercially planned cross-border electricity exchanges between the Western Balkans and the EU decreased significantly, while prices in Energy Community markets were considerably lower than in neighbouring EU markets. This is a clear economic signal. Therefore, in my view, the challenge is no longer convincing people to build renewable

energy projects. The challenge is to build the grids, markets, energy storage capacity and commercial models quickly enough to enable these projects to actually be realised.

Q: Looking at the Western Balkans and Croatia today, which changes in energy policy or market dynamics do you consider the most significant over the past year?

A: The biggest change is that the conversation has become much more commercially focused. Three or four years ago, almost every panel at conferences was devoted to targets: how many gigawatts by 2030, what percentage of energy from renewable sources, and when coal would be phased out. These topics are still being discussed, but companies are now asking completely different questions: How much will my grid connection cost?



Inesa Shahnazarova

Founder and CEO of Invest In Network and founder of the regional Energy Week Western Balkans conference



What happens when prices turn negative? Do I need a battery? Can I sign a bankable PPA? Can I sell electricity across borders? How will CBAM affect my business model? This is progress. It means the market is maturing.

We are also seeing projects of a completely different scale and level of sophistication. Serbia is moving forward with its significant 1 GW programme of solar capacity with battery storage, while the scale of international private investment is

also increasing. Alcazar Energy is developing large wind projects across the region, including the nearly 400 MW Štip wind farm in North Macedonia and the 118.8 MW Bijela project in Montenegro.

Kosovo*, meanwhile, is progressing with a 170 MW / 340 MWh

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

battery storage programme. In Montenegro, EPCG and Masdar are developing solar projects with a combined capacity of 150 MW, while considering more than 400 MW of pumped-storage hydropower capacity. Albania is seeing increasingly serious development of projects combining solar energy and storage, while the proposed 1.6 GW expansion of the Moglice pumped-storage hydropower plant demonstrates the growing importance of flexible capacity in considering the future energy system, particularly alongside existing hydropower capacity.

At the same time, interconnections are becoming an integral part of the renewable energy investment story. Montenegro already has a direct electricity connection with Italy, and there is renewed and more intensive discussion about completing its second pole. Albania and Italy are considering another major electricity corridor across the Adriatic.

Suddenly, when we talk about a wind or solar project in the Western Balkans, the potential market is no longer necessarily limited to the country where the project is located. This completely changes the investment perspective.

Q: Hybrid Projects, Energy Storage and Electricity Grid Digitalisation Are Becoming Increasingly Important – How Ready Is the Region, in Terms of Infrastructure and Regulation, to Accommodate This Growth?

A: Technologically, the region is much more prepared than people think. Commercially and regulatorily, however, we are still trying to catch up with this development. Energy storage is a good example. A few years ago, battery energy storage systems (BESS) were something that was added to presentations when discussing the future. Today, we have concrete projects being contracted, financed and built across the region. Investors are actively considering

co-locating renewable energy sources with batteries, energy companies are looking at batteries as a means of providing flexibility, while transmission system operators are considering storage in the context of balancing and system stability. But installing batteries is the easier part. The more difficult question is: how will that battery make money? If the market does not properly value balancing, ancillary services, flexibility and intraday market optimisation, the technology may be ready while the business model is not. The same applies to digitalisation. We can introduce AI-based forecasting, smart grids and advanced energy management systems, but these tools will reach their full potential only when the existing market generates appropriate price signals and participants have access to high-quality data. That is why this year we deliberately placed Storage, Flexibility & Hybrid Assets and Digitalisation, AI & Energy Systems at the very heart of the Energy Week Western Balkans programme. I do not want yet another discussion about whether batteries and artificial intelligence are important. We already know that they are. The more interesting

question is what actually works, where the revenues come from, and which solutions are already delivering measurable results.

Q: CfD and Corporate PPA Agreements Are Changing the Way Energy Is Traded – Based on Your Experience, Which Model Is Best Suited to the Specific Characteristics of the Western Balkans?

A: I do not think the answer is CfD or PPA. The region needs both models, but for different reasons. CfD agreements are extremely effective at the stage we are at today. They provide greater price predictability, reduce project financing risk and enable governments to use competition instead of administratively determined tariffs. Serbia and Albania have already demonstrated what competitive auctions can achieve, and Montenegro has now entered this phase as well. But we cannot base the development of a mature renewable energy market indefinitely on government-backed electricity offtake. Corporate PPAs are the next piece of the puzzle, particularly because CBAM is changing the way energy-intensive industries view costs and competitiveness. Steel, aluminium and cement producers,





as well as other exporters, increasingly need access to demonstrably low-carbon electricity. This naturally creates a customer base for renewable energy producers. The problem is that everyone likes PPAs in theory. In practice, the questions become much more complex: Who assumes imbalance risk? What happens when market prices fall sharply? How long will a corporate buyer actually commit? Which guarantees will a bank accept? And how should a cross-border PPA be structured? Therefore, I expect a mixed market: CfDs will help bring new large-scale capacity online, corporate PPAs will become increasingly important for industrial buyers, while merchant sales will grow with the support of energy storage and increasingly liquid regional markets. This is a healthier market than relying on any single model.

Q: Gatherings Such as Energy Week Western Balkans Bring Investors, Regulators and Developers Together – How Much Do Such Formats Accelerate Concrete Business Opportunities Compared with Standard Bilateral Discussions?

A: A great deal – but only if the event is designed specifically with that goal

in mind. I have never believed that simply bringing 1,000 people together in a hotel ballroom automatically creates 1,000 opportunities. In fact, sometimes the effect is the opposite. People spend two days trying to find the three people they genuinely wanted to meet. Energy Week Western Balkans is deliberately designed differently. We carefully select the participants. We know who is coming, which markets they are interested in, which projects they are developing and who they need to connect with. Our B2B platform becomes operational before the conference, so participants can arrive in Montenegro with meetings already scheduled. During the event itself, we actively connect people rather than leaving networking to chance. That is precisely why we have resisted turning Energy Week into a mass exhibition. Our ambition is very clear: Energy Week Western Balkans should be a place where leading international companies interested in the region can, in one setting, connect with the people shaping and implementing the region's energy transition – governments, regulators, energy companies, transmission system operators, electricity exchanges and developers.

From the very beginning, we have built the event around this principle. The point is not simply to bring a large number of people into one room, but to carefully select the right combination of regional decision-makers and global companies, and then create an environment in which those relationships can develop into projects, partnerships and investments.

That, in my view, is what makes Energy Week the leading renewable energy platform for the entire region. For the fifth edition, taking place this October, the list of international investors and financial institutions is already very strong and includes Actis, AFD, Alcazar Energy, Çalık Renewables, DEG (KfW), EBRD, Econergy Group, EIB, Emergy, Gemcorp Capital, IFC, Masdar, MUFG Bank, ProCredit Holding, Rezolv Energy, as well as many others. When it comes to regional representation, breadth is equally important. We are not talking about one or two countries. Major state-owned energy companies, transmission system operators, electricity exchanges, developers and regulators from Montenegro, Serbia, North Macedonia, Bosnia and Herzegovina, Kosovo and Albania are represented. It is difficult to find another place where an international company can connect with virtually the entire energy ecosystem of the Western Balkans, in one place and over the course of two days. But names alone do not make a good conference. What matters is what actually happens between those people. For me, the real measure of success is not the number of badges printed or how impressive the stage looks on social media. True success is when someone tells us six months later: “We met our partner at Energy Week,” “that contact developed into a project,” or “we entered the market thanks to the conversations we had in Montenegro.” That is the standard we set for ourselves.

Interview by Milena Maglovski



UNLOCKING THE POTENTIAL OF VERTICAL FACADE INSTALLATIONS

While rooftops remain the primary location for solar installations, vertical facades offer significant, untapped potential – especially for industrial and commercial buildings with limited roof space. Facade-mounted systems can enhance building energy efficiency, contribute to certification standards, and improve sustainability metrics.

Facade structures in commercial and industrial buildings vary significantly. Reliable mounting systems must therefore address different substrates and thermal properties. One of the world's leading mounting system manufacturers, K2 Systems, has implemented K2 WallPV as an engineered solution that ensures structural integrity, installation efficiency, and aesthetic integration for vertical photovoltaic systems – while also supporting their long-term energy-efficient operation.

K2 Systems, has implemented K2 WallPV as an engineered solution that ensures structural integrity, installation efficiency, and aesthetic integration for vertical photovoltaic systems

Mounting Systems for Key Facade Types

Ideally, mounting systems are compatible with the most common types of facade constructions used in commercial and industrial architecture:

1. Sandwich Panels

These composite wall systems consist of outer and inner sheet metal layers with an insulating core (typically mineral wool or PUR/PIR). K2 WallPV for example uses self-tapping screws to anchor aluminium rails directly onto the sandwich panels, providing a reliable and efficient installation method. The system is designed to maintain the structural integrity of the panel, ensuring that

3. Insulated Concrete Walls

When working with insulated concrete facades, special attention must be paid to the thickness and type of insulation layer. K2's solution includes extended fasteners that bridge the insulation layer and a specially developed PerfoRail, which minimizes thermal bridging while enhancing structural stability.

Architectural Integration and Aesthetic Appeal

From an architectural perspective, vertical PV installations contribute to a modern and functional design language. Facade-mounted solar panels offer a clean, high-tech aesthetic and can be creatively integrated to enhance a building's visual

system seamlessly into building elevations, ensuring visual consistency without compromising functionality.

Technical Considerations: Performance and Precision

Installing PV modules on facades presents unique challenges that require specialized knowledge and precision. For example:

Load transfer: On sandwich panels, it is critical to avoid compromising the bond between the metal layers and the insulating core. Improper fastening can lead to structural issues or long-term degradation of panel performance. Solutions of K2 Systems ensure secure load transfer without damaging the composite structure.



the attachment does not compromise the insulation core or lead to deformation of the outer skin.

2. Concrete Walls

For solid concrete facades, K2 Systems provides a Façade Rail with high-strength concrete screws that ensure reliable anchoring of the substructure rails. These are suitable for both cast-in-place and precast concrete surfaces.

identity. By leveraging symmetry, modularity, and intelligent framing, PV facades can align beautifully with other architectural elements – a benefit that many architects are now embracing in new commercial and industrial builds.

As one of the world's leading developers and manufacturers of PV mounting systems, founded in 2004, K2 Systems also offers support in layout planning to help clients integrate the

As one of the world's leading developers and manufacturers of PV mounting systems, founded in 2004, K2 Systems also offers support in layout planning

Orientation of the facade	Yearly PV energy production (kWh)	Energy yield per kWp (kWh/kWp)
South (Azimuth angle 0°)	≈ 38,900	≈ 778
West (Azimuth angle 90°)	≈ 32,300	≈ 646
East (Azimuth angle -90°)	≈ 32,200	≈ 644

Table 1 Annual PV Energy Yield by Facade Orientation (Example for Belgrade, Serbia; 50 kWp, 90° Tilt, 14% System Losses).

Thermal bridges and moisture management: For insulated concrete facades, it's essential to consider how mounting systems penetrate the insulation layer. Incorrect handling can lead to thermal bridges or moisture ingress. K2's perforated rail design and fastening method are specifically engineered to maintain building envelope performance while ensuring robust anchorage.

Structural verification: while K2 Systems provides structural verification for the mounting system, including the PV modules, the structural assessment of the building facade itself remains the responsibility of the building owner or project engineer.

Economic and Energy Benefits: Unlocking Vertical Potential

Beyond technical and aesthetic considerations, facade-mounted PV systems offer compelling economic advantages. In urban environments and on buildings with limited or shaded roof space, vertical PV arrays can make a measurable contribution to energy yield and self-consumption. East-, West-, and even North-facing facades can generate valuable electricity – especially when paired with high-efficiency PV modules and optimized inverter systems (see Table 1).

Adding facade-mounted PV also enhances a building's energy classification, enhance sustainability metrics, and helps meet increasingly stringent building energy codes and certification standards such as DGNB (in Germany), LEED (in the US) or BREEAM (international).



K2 Systems' WallPV product line provides a versatile system for integrating photovoltaics into modern facades, supporting sustainable architecture without compromising design or functionality

Outlook: Towards Energy-Positive Buildings

Facade PV systems are increasingly relevant as energy codes tighten and as urban density limits rooftop space. By combining technical reliability, measurable energy contribution, and thoughtful architectural integration, vertical PV solutions offer a practical way to enhance building performance.

As such, K2 Systems' WallPV product line provides a versatile system for integrating photovoltaics into

modern facades, supporting sustainable architecture without compromising design or functionality.

Interested to see how the scalable modular system is mounted on facades? Watch the video to discover all the details!





BUSINESS INTELLIGENCE INSTITUTE (BII) is a respected partner for business leaders and companies, as its programs are based on knowledge, analytics, experience, high-quality content, and the ethics of a professional team.

BII provides business consulting in the field of corporate communications and marketing, which includes the creation of communication strategies, event organization, digital marketing, public relations management, and the development of CSR strategies.

BII offers its partners solutions that positively impact not only their shareholders but also their stakeholders, as we think through the lens of sustainable development.

Motivated by global best practices and local opportunities, we experiment with new business perspectives that encourage a rethinking of existing work and communication models.

OUR BRANDS:



www.bir.rs



www.bic.rs



www.biforum.rs



www.startupshower.rs



www.eventsportal.rs



www.marketingminds.rs



www.belgradelegacyball.rs

Business Intelligence Institute





SEE ENERGY 2026: ENERGY, INVESTMENT AND THE MARKET A NEW PHASE

The seventh edition of the SEE ENERGY event brings a program that connects topics that will increasingly shape the energy sector – from battery energy storage systems, PPAs and electricity markets to digital solutions, e-mobility, biogas and biomethane. This year's special focus will be on concrete projects and business models, as well as on what is needed to make new energy infrastructure technically feasible, commercially viable and financially sustainable.

On 4 and 5 November, SEE ENERGY will bring together companies, investors, experts and institutions from Serbia and the region in Novi Sad. We discussed this year's program, growing interest in BESS, opportunities for bioenergy development, and changes in the way energy is financed and marketed with Jelena

**On 4 and 5 November,
SEE ENERGY will bring
together companies,
investors, experts
and institutions from
Serbia and the region
in Novi Sad**

Bunčić, organizer of the SEE ENERGY event and President of the National Biomass Association SERBIO.

Q: SEE ENERGY has over the years established itself as a regional meeting place for experts, companies, investors and institutions from the energy sector. How would you assess the significance of the conference today, and how has its focus evolved over the years?

A: SEE ENERGY has grown over the course of its previous editions alongside the market and the changes taking place in the energy sector. From topics that were initially focused primarily on renewable energy sources and energy efficiency, we are now addressing a much more complex energy system – investments, the integration of renewable energy

sources, energy storage, system flexibility, digitalization and new market models.

This year, we are organizing the seventh edition of the SEE ENERGY event and taking another important step in its development. In addition to the conference program, we are expanding the exhibition segment to bring technology, projects, capital, and expertise together in one place. In this way, SEE ENERGY is increasingly taking the form of a regional business platform that connects expert content, technology and business networking.

I believe that this is precisely its greatest value today. The energy transition is no longer simply a matter of adding new renewable generation capacity. It is increasingly about integrating that capacity into



Jelena Bunčić

Organizer of the SEE ENERGY event
and President of the National Biomass
Association SERBIO



the system, developing the grid and energy storage, electricity markets, financing, and the ability of industry to implement new energy infrastructure in practice. We want to develop SEE ENERGY precisely at the point where these topics intersect with concrete business decisions.

Q: The program for SEE ENERGY 2026 is still being prepared. Can you nevertheless reveal something more about this year's program and the topics that will be in focus?

A: We are still shaping the program, and it is important to us that it reflects what is actually happening in the market at this moment, rather than simply addressing general topics related to the energy transition. We plan to dedicate the first day to integrating renewable energy sources in industry, the electricity market and PPA models, system flexibility, e-mobility, renewable fuels, biogas and biomethane, digital solutions in energy, and the growing energy needs of data centers.

We plan to place a strong focus on battery energy storage systems

on the second day – from utility-scale projects and their integration into the electricity system to the use of batteries in industry, energy management, and the financing and insurance of these investments. We want to focus on concrete business models and project experience, namely on the questions of what is technically possible today, what is commercially viable, and under what conditions a project can be financed.

The program will also be directly connected to the exhibition segment of the event, so that, alongside strategic and regulatory issues, we can showcase technologies and concrete solutions that are already being applied, or could be applied, in Serbia and the region.

Q: This year's event places particular emphasis on digitalization, system flexibility and next-generation market models. Why are these topics especially important for the energy transition and market development today?

A: The energy transition is entering a phase in which it is no longer sufficient simply to build new renewable generation capacity. As the share of solar and wind power increases, the system must be able to respond much more quickly to changes in generation and consumption. This is why flexibility is becoming one of the key issues – through energy storage, demand-side management, flexible generation capacities and more active participation of consumers in the market.

Digitalization is a prerequisite for such a system, as it enables generation, consumption and storage to be managed based on data and in real time. At the same time, the role of consumers is changing: industry no longer has to be merely a buyer of electricity, but can also generate and store energy, adjust consumption to market conditions and participate in providing flexibility services.

The energy transition is therefore increasingly shifting from electricity



generation itself towards energy management and the market.

Q: Battery Energy Storage Systems, or BESS, are becoming increasingly important. How prominently will energy storage feature at this year's conference, and what level of interest are investors and companies showing in this area?

A: BESS will be one of the central topics of this year's SEE ENERGY event, and the plan is to dedicate a significant part of the second day to it. Energy storage is no longer merely an enabling technology for renewable energy sources; it is becoming an important part of the development and stability of the electricity system.

Investor interest in Serbia is already very evident. This year, EMS signed connection agreements for seven standalone battery energy storage systems, while a much broader portfolio of BESS projects is being developed at the same time. This shows that we are no longer talking only about a technology of the future, but about a concrete investment market that is now taking shape.

At the same time, important questions remain as to how BESS projects will generate revenue, how they will participate in the market and provide system services, and under



what conditions such projects will be financially sustainable. It is precisely this link between technology, the electricity system and the investment case that we want to explore at SEE ENERGY.

Q: In addition to BESS, the announced topics include utility-scale projects, e-mobility, biogas and biomethane, renewable fuels and digital energy solutions. Which areas currently show the greatest potential for development in Serbia and the region?

A: It is difficult to single out just one area, as the market is changing very rapidly. Large-scale renewable energy projects certainly remain important,

but their further development increasingly depends on grid connection capacity, energy storage and the conditions under which the generated electricity will be marketed.

There is also significant room for development in bioenergy, particularly biomass, biogas and biomethane. Serbia has domestic resources that remain underutilized, especially in industry and district heating systems. At the same time, companies looking to replace fossil fuels need secure supply, consistent fuel quality and long-term contracts. This is where we see the market gradually changing, with additional momentum coming from

Q: PPA agreements, the electricity market, as well as the financing and insurance of energy projects, will be part of the conference. What challenges are investors most frequently facing today, and to what extent are business models in the energy sector changing as a result of the energy transition?

A: One of the biggest challenges for investors today is predictability – of the regulatory framework, grid connections, market prices, as well as future project revenues. It is no longer enough to have a good location and technology. Banks and investors want to know how a project will

energy storage. Market volatility, negative prices, and balancing costs are further changing the way project profitability is assessed.

That is why we can no longer speak of a single universal business model, but rather of a model that must be tailored to the specific project, buyer and market. Financing, insurance, PPAs and market risk management are becoming integral parts of project development from the very beginning.

Q: SEE ENERGY 2026 brings together a conference, exhibition space and B2B meetings. What do you expect will be the greatest value of this year's gathering for participants, and what concrete partnerships or projects would you like to encourage?

A: I believe the greatest value lies precisely in the fact that SEE ENERGY brings together the conference, the exhibition, and direct business contacts. Some participants come to learn what is happening in the market, others to present a technology or project, while some are looking for a partner, supplier, investor, or a concrete solution for their company. We want everyone to have the opportunity to meet in one place.

That is why we are devoting considerable attention to the B2B segment and connecting participants. We want to bring investors and developers together with technology and EPC companies, industry with energy solution providers, and projects with banks and other sources of financing. It is also important to us that companies from Serbia have more direct contacts with partners from the region and abroad.

Ultimately, the best result for us is when some of the conversations started during those two days continue after SEE ENERGY – through a new cooperation, partnership, investment, or concrete project. See you in Novi Sad on 4 and 5 November.

Interview by Milena Maglovski



Energy storage is no longer merely an enabling technology for renewable energy sources; it is becoming an important part of the development and stability of the electricity system

industry's need to reduce emissions and adapt to new requirements, including CBAM.

E-mobility, charging infrastructure and digital energy solutions will also play an increasingly important role. That is why we wanted SEE ENERGY to focus not on a single technology, but to showcase the different directions in which the energy market is developing today.

generate revenue in the years ahead and how resilient that revenue will be to market changes.

This is why PPA agreements are becoming increasingly important, as business models also evolve. Alongside long-term contracts, various electricity sales models are emerging, combining market-based and contracted revenues, as well as projects that integrate generation with



VOLVO CELEBRATES A CENTURY OF INNOVATION WITH SPECIAL TRUCK EDITION

The anniversary “Volvo 100 Year Edition” features a specially designed interior and exterior, while also commemorating a century of advancements in safety, efficiency, and technology in transport. Trucks from the special edition will be available to order from September 2026.

Volvo Trucks is preparing to mark its 100th anniversary, and one way it will celebrate a century of development in the trucking industry is by introducing special editions of the Volvo FH, FH Aero, FH16, and FH16 Aero models. The anniversary version combines state-of-the-art technology with details that pay tribute to the company’s history and the generations of trucks that have shaped its development.

The interior has been designed as a blend of a contemporary, premium look and elements inspired by Volvo’s heritage

The “Volvo 100 Year Edition” follows a series of recent upgrades to the electric, diesel and gas powertrains available across the current range of heavy-duty trucks. However, particular attention in this edition has been devoted to design and to the space in which drivers spend a large part of their working day.

Anniversary Details Inside the Cab

The interior has been designed as a blend of a contemporary, premium look and elements inspired by Volvo’s heritage. The seats have been redesigned in a two-tone combination, with the lower section upholstered in leather and the upper section featuring grey textile fabric with an embroidered anniversary motif. Brown leather details appear throughout the cab, with the same color echoed in decorative elements on the exterior.

The anniversary motif is not limited to the seats. It also appears in the welcome light, which projects the motif onto the ground in front of the truck when the doors are opened, and on new 3D-printed speaker grilles.

Another distinctive visual element is the set of cab curtains featuring different Volvo truck models from the company’s previous 100 years. Illuminated steps and LED strips on the console further enhance the ambiance, with drivers able to choose between red and white lighting.

Completing the retro-modern aesthetic, the trucks also feature thicker floor mats in a black-and-grey mélange finish, accented with brown leather details.

– The centenary truck is a celebration of everything we have achieved over the past century and, in every sense, represents a very special truck – says Jonathan Disley, Design Director at Volvo Trucks.

According to him, the design is both modern and premium, while also serving as a tribute to the



company’s Swedish heritage, decades of innovation and the professionalism that has evolved alongside the development of the transport industry.

From Safety to Efficiency

The anniversary edition is not simply a design project, but also reflects the current stage of Volvo truck development, which in recent years has focused on several areas – from advances in safety and energy efficiency to the development of different powertrain technologies.

The Volvo FH has recently received upgrades to its electric, gas and diesel powertrains, aimed at improving performance, range, energy efficiency and power. At the same time, safety remains one of the key characteristics of this truck family.

This is also confirmed by the results of Euro NCAP truck safety testing. Volvo models that have so far received the highest, five-star rating

include the Volvo FH 4x2 tractor unit, Volvo FH 6x2 rigid truck, Volvo FH Aero 4x2 tractor unit and Volvo FH Aero 6x2 rigid truck.

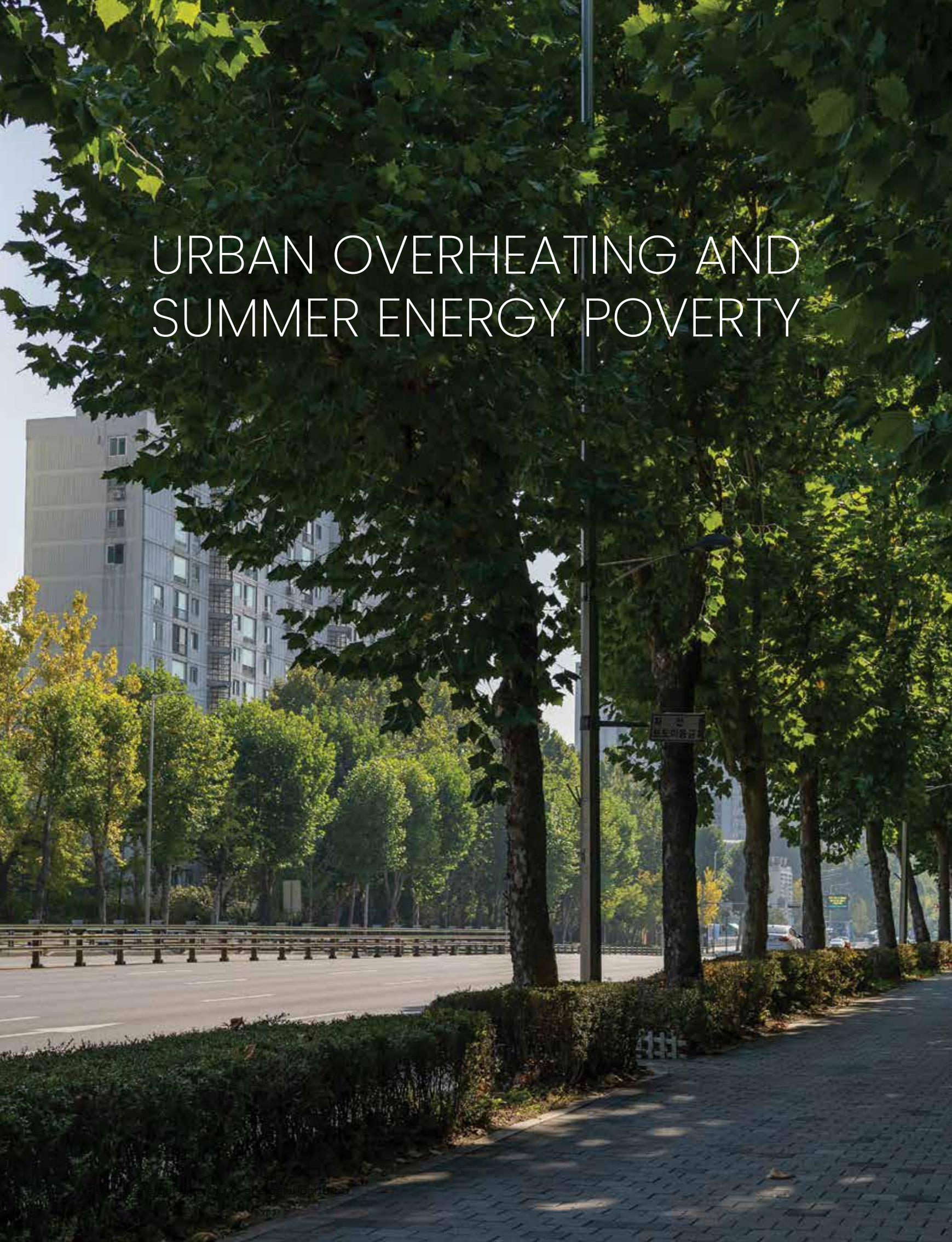
– This special edition represents the pinnacle of Volvo truck design and manufacturing over the past century – the result of 100 years of continuous improvements in safety, quality, driver comfort, productivity, fuel efficiency and emissions reduction – says Jan Hjelmgren, Head of Product Management at Volvo Trucks.

The “Volvo 100 Year Edition” will be available in most powertrain and chassis configurations currently offered for the FH Aero, FH16 Aero, FH, and FH16 models, with orders opening in September 2026.

The anniversary edition thus joins a number of previous special editions, including the Volvo FH 25 Year Special Edition, Volvo FH Aero Euro NCAP Special Edition and Volvo Ocean Race Limited Edition.

Prepared by Milena Maglovski

URBAN OVERHEATING AND SUMMER ENERGY POVERTY



Climate analyses based on statistical data for Bosnia and Herzegovina from 1960 to 2023 show a steady increase in the number of very hot summer days with temperatures above 35°C, by approximately 4–8 days per decade, with projections suggesting this trend will intensify further throughout the century.¹ Since the early 2000s, the entire Western Balkans region has experienced an increase in the frequency of extreme heat events, alongside a decline in extreme cold events.² Cities are particularly vulnerable to these changes, and their vulnerability is increasing because of urbanization, higher building density, and growing pressure on green spaces. Studies of cities in the Western Balkans indicate an expansion of built-up and other artificial surfaces, often at the expense of natural, semi-natural, and agricultural areas, while in some urban environments rapid construction is leading to the loss and fragmentation of green spaces.³

1 Trbic G, Popov T, Djurdjevic V, Ivanisevic M and Gnjato S (2026). *Analysis of trends and projected changes in summer and very hot days in Bosnia and Herzegovina*. Front. Clim. 8:1762709. doi: 10.3389/fclim.2026.1762709

2 *RESHAPING CITIES: Readyng Cities in the Western Balkans for a Changing Climate* (2024), The World Bank.

3 World Bank (2024), *Western Balkans Regular Economic Report No. 25 – Invigorating Growth, Spotlight: Greening Cities*.

Urban morphology significantly affects the intensity of overheating. Tall, densely packed buildings along narrow streets create urban canyons where solar radiation is absorbed and reflected between façades and road surfaces, while limited sky exposure slows cooling at night. At the same time, compact building blocks can restrict natural air circulation, while a lack of trees reduces shading and natural cooling through evapotranspiration.^{4,5}

In urban areas, this problem is further linked to air quality. When natural air circulation weakens, exhaust fumes, dust, and other pollutants can remain trapped longer in the lower layers of the atmosphere. When outdoor air is both hot and polluted, the ability to naturally cool indoor spaces by opening windows becomes limited, increasing dependence on mechanical cooling. During winter, similar urban morphology can have different consequences: temperature inversions, weak winds

4 Li, Y., Schubert, S., Kropp, J. P., & Rybski, D. (2020). “On the influence of density and morphology on the Urban Heat Island intensity.” *Nature Communications*, 11, 2647. DOI: 10.1038/s41467-020-16461-9.

5 Huang, Z., Duan, L., Xu, Y., et al. (2025). “Exploring the influence of urban green space and urban morphology on urban heat islands using street view and satellite imagery.” *Scientific Reports*, 15, 23759. DOI: 10.1038/s41598-025-07904-8.



Prof. Petar M. Gvero, PhD
University of Banja Luka, Faculty of Mechanical Engineering

and increased emissions from traffic and individual heating systems can contribute to the prolonged accumulation of pollutants in the lower layers of the atmosphere. In this way, urban form, air quality and the energy needs of buildings become interconnected challenges.

Pressure on green spaces is not merely a matter of aesthetics and public-space quality; it directly affects cities' ability to adapt to rising temperatures, maintain acceptable air quality, and limit the need for mechanical cooling. Urban planning policies are therefore needed that simultaneously regulate building density, protect and expand green infrastructure, and preserve natural ventilation corridors.

Another challenge is that some larger and medium-sized cities in

**Globally, energy use
for space cooling
has more than
tripled since 1990**

the Western Balkans, such as Banja Luka, Sarajevo, and Skopje, have not yet adopted new master urban plans, while Mostar continues to rely on a combination of spatial and regulatory plans for spatial development. This can make it harder to systematically incorporate climate adaptation measures, green infrastructure, and urban heat island mitigation into long-term urban development planning.

Urban overheating also directly affects buildings' energy needs. The heating of built-up surfaces during the day increases the need for indoor cooling, particularly in densely developed urban areas.⁶ Energy-inefficient buildings with poor insulation, inadequate solar protection and inefficient cooling systems are particularly vulnerable, as they overheat more quickly and require more energy to maintain acceptable indoor comfort. The problem is further exacerbated in areas with elevated air pollution, where opportunities for natural ventilation and night-time cooling are limited.

Energy consumption for cooling has risen sharply in recent years. Globally, energy use for space cooling has more than tripled since 1990, while the growing number of air-conditioning units and increasingly frequent heatwaves are further increasing peak electricity demand.⁷ In the European Union, this trend is also pronounced: household energy consumption for cooling increased from 40.5 thousand TJ in 2018 to 80.4 thousand TJ in 2024, nearly doubling in just six years.⁸

6 Su, M. A., Ngarambe, J., Santamouris, M. & Yun, G. Y. (2021). "Empirical evidence on the impact of urban overheating on building cooling and heating energy consumption." *iScience*, 24(5), 102495. DOI: 10.1016/j.isci.2021.102495.

7 International Energy Agency – IEA (2023). *Space Cooling. Tracking Clean Energy Progress*, Paris.

8 Eurostat (2026). *Energy use for cooling in EU households doubled in 6 years*. Eurostat News, 8 July 2026. Dataset: nrg_d_hhq.

Demand peaks occur during periods of extreme temperatures, precisely when certain parts of the power system are under additional strain



The growing need for cooling is also becoming an energy security issue. Demand peaks occur during periods of extreme temperatures, precisely when certain parts of the power system are under additional strain. High temperatures can reduce the efficiency of thermal power plants and limit water availability for

cooling, while also affecting hydro-power generation. At the same time, electricity demand for air conditioning increases.

The consequences of this trend are also visible in the Western Balkans, where some countries recorded significant disruptions in electricity supply and record levels



of electricity demand during the 2024 heatwaves.

It is precisely at this intersection of urban overheating, energy needs, and costs that the problem of summer energy poverty emerges. According to the EU Energy Efficiency Directive, energy poverty encompasses the inability to access basic energy services necessary for an adequate standard of living and health. In addition to heating, hot water, and other services, it explicitly includes cooling.⁹

The concept of summer energy poverty, or cooling poverty, refers to a household's inability to maintain safe and acceptable thermal comfort during periods of high temperatures because of limited income, high energy costs, lack of access to efficient cooling, or poor energy performance of the dwelling.¹⁰ The issue therefore goes beyond simply having an air-conditioning unit. A household may have a cooling system but be unable to use it sufficiently because of electricity costs, or may live in a building that overheats and consequently requires disproportionately high energy consumption.

In this way, climatic and urban planning factors can deepen existing

social inequalities. Lower-income households have fewer opportunities to renovate their homes, install external solar shading, buy efficient appliances, or afford higher cooling costs. According to available data, around 26 percent of households in the European Union cannot maintain a comfortable temperature in their homes during the summer, while this share reaches almost 35 percent among the lowest-income households.¹¹ These households may be forced to choose between high electricity bills and living in an overheated space.

An additional challenge in the Western Balkans is the uneven approach to defining and monitoring energy poverty. While some countries have established legal definitions and certain monitoring mechanisms, Bosnia and Herzegovina still lacks a unified legal definition and an indicator system that would enable continuous monitoring of the problem, particularly its summer dimension. In this context, the Horizon Europe project ENPOWER – Enhancing Scientific Capacity for Energy Poverty (<https://enpower-bih.eu/>) is particularly significant. In Bosnia and Herzegovina, the project is developing a conceptual and operational framework to define and monitor energy poverty. The approach links

household income and energy costs with housing quality, heating and cooling systems, access to energy services and social vulnerability. Such a framework can also improve identification of summer energy poverty, which traditional indicators focused primarily on winter heating cannot fully capture.

Addressing urban overheating and summer energy poverty requires action at multiple levels. The first step is better understanding the spatial distribution of the problem by mapping daytime and nighttime temperatures, green and impervious surfaces, building density, and natural ventilation corridors. For major urban development projects, microclimate analyses and CFD simulations can help assess the impact of new construction on temperatures and air circulation before construction begins.

At the city level, priorities should include protecting green spaces and ventilation corridors, increasing shaded areas, reducing excessive paving and taking a more careful approach to building density and urban morphology. At the building level, thermal insulation, energy-efficient windows, external solar shading, adequate ventilation and efficient cooling systems can reduce energy demand and improve summer thermal comfort.

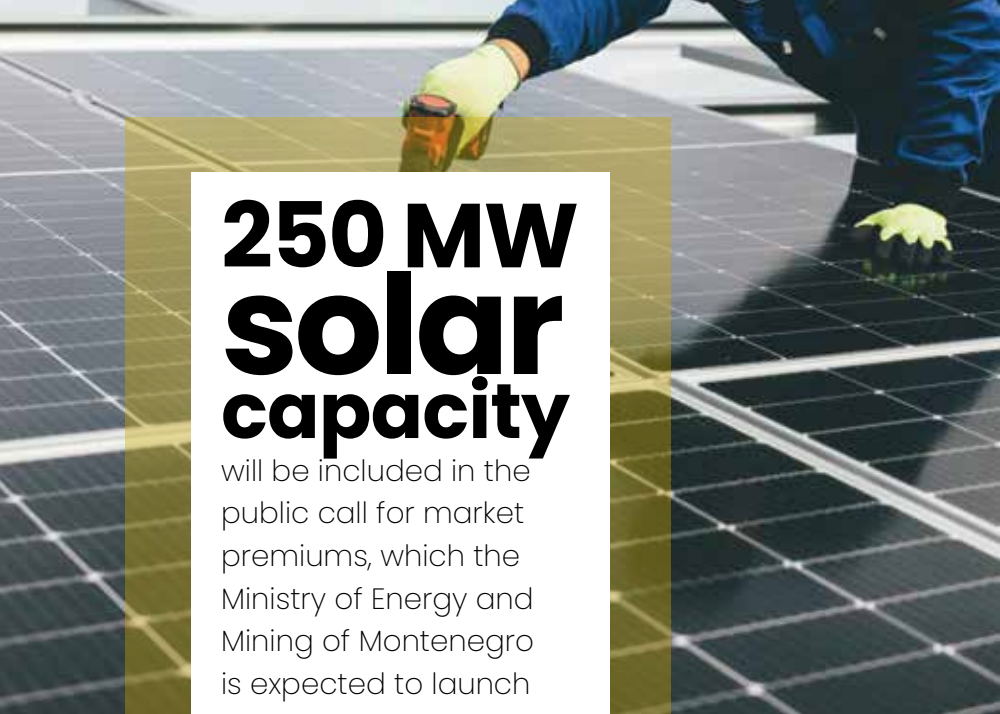
The social dimension is equally important. The most vulnerable households need targeted support for energy renovation, purchasing efficient cooling systems, and measures to reduce exposure to extreme temperatures. Addressing summer energy poverty therefore requires integrating urban planning, energy efficiency, social policy, and public health, with the ultimate goal of ensuring that all residents, regardless of income, can maintain safe and acceptable thermal comfort in their homes.

Prof. Petar M. Gvero, PhD

⁹ European Parliament and Council (2023). Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency, Article 2(52).

¹⁰ Koukoulfikis, G., Roca Reina, J. C., Katofo, N., Ozdemir, E., Volt, J. and Carlsson, J. (2026). *Addressing Residential Cooling Demand and Summer Energy Poverty in the EU – Towards a Cooler Future*. Luxembourg: Publications Office of the European Union. JRC143288. DOI: 10.2760/8743866.

¹¹ Koukoulfikis, G., Roca Reina, J. C., Katofo, N., Ozdemir, E., Volt, J. and Carlsson, J. (2026). *Addressing Residential Cooling Demand and Summer Energy Poverty in the EU – Towards a Cooler Future*. Luxembourg: Publications Office of the European Union. JRC143288. DOI: 10.2760/8743866.



250 MW solar capacity

will be included in the public call for market premiums, which the Ministry of Energy and Mining of Montenegro is expected to launch soon.

[PAGE 6]

Trading volume on the North Macedonian day-ahead market increased **by 23 percent** in the first half of 2026 compared with the same period last year.

[PAGE 16]



ABB



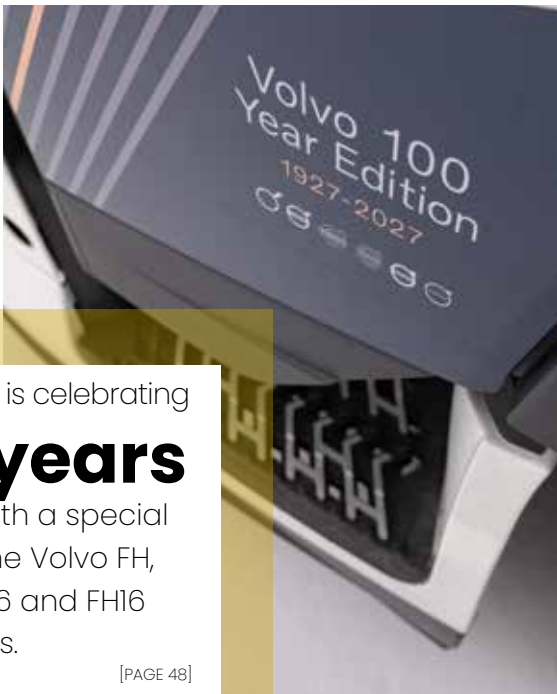
ABB Ability™ BuildingPro

is built around the idea of a building as an integrated energy and functional whole.

[PAGE 20]

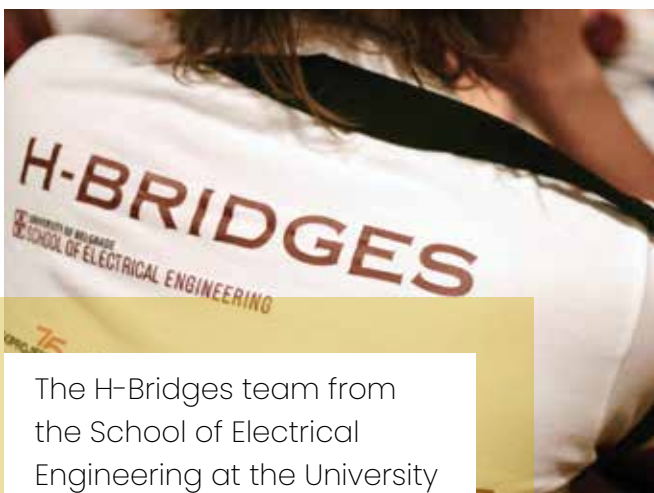


V O L V O



Volvo Trucks is celebrating **100 years** of history with a special edition of the Volvo FH, FH Aero, FH16 and FH16 Aero models.

[PAGE 48]



The H-Bridges team from the School of Electrical Engineering at the University of Belgrade secured **fourth place worldwide** at the IFEC 2026 competition.

[PAGE 56]



charge&GO

The first two 110 kW Sungrow DC chargers

have been commissioned as part of the Charge&GO network.

[PAGE 60]

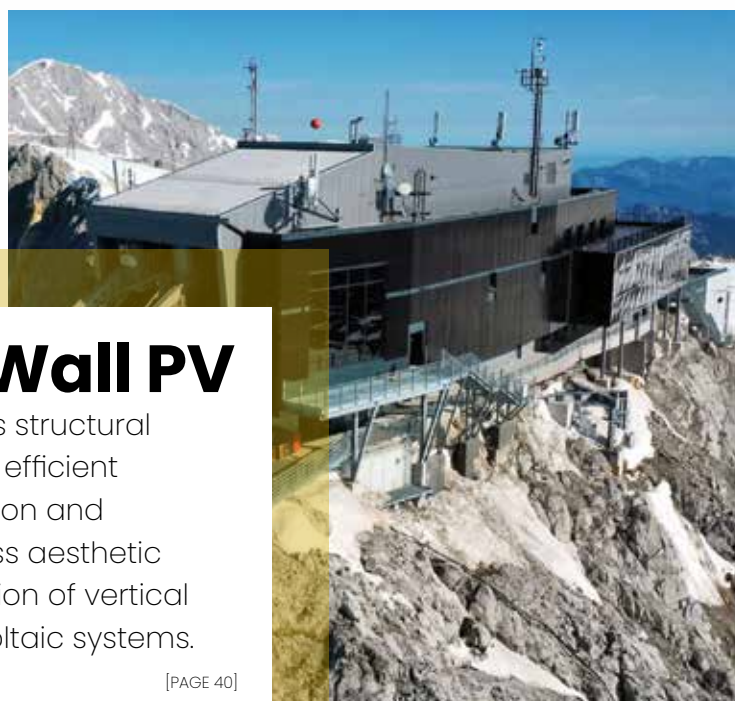


**ENERGY WEEK
WESTERN BALKANS**

20 GW

of new renewable energy capacity by 2040 is an achievable target for the Western Balkans, says Inesa Shahnazarova.

[PAGE 36]



K2 Wall PV

provides structural stability, efficient installation and seamless aesthetic integration of vertical photovoltaic systems.

[PAGE 40]



Serbia adopted its **Environmental Protection Strategy** through 2033 this year.

[PAGE 82]

LUXOR
solar module manufacturer

ECO LINE Classic, ECO LINE Pro, and ECO LINE Prime

are the three new, clearly defined segments of the German manufacturer Luxor Solar.

[PAGE 26]



FROM A STUDENT PROJECT TO THE WORLD STAGE

The H-Bridges team from the School of Electrical Engineering at the University of Belgrade has won fourth place worldwide and the award for Best Technical Report at the IFEC 2026 competition. Behind the result lies almost a year of developing a bidirectional on-board charger, as well as a working system that the Laboratory for Digital Control of Converters and Drives has been continuously building and improving.

In an interview with Energy Portal, Assistant Professor Aleksandar Milić, the team's mentor, discusses the project's key challenges, the way H-Bridges operates, and how student projects can evolve into innovations, startups and commercial solutions.

The greatest challenge was not any single requirement, but rather the fact that they had to be met simultaneously

Q: You won fourth place and the award for Best Technical Report among 30 teams at the IFEC 2026 competition. What does this recognition mean to you and the team, considering how strong the competition was?

A: Fourth place in the world confirms our consistency, while the award for Best Technical Report is proof of the team's engineering maturity. In global academic practice, technical documentation is considered just as important as the hardware itself. When you receive such recognition from an international jury made up of leading IEEE experts, it means that your system did not work by chance. It is proof that it is backed by a sound methodology, a mathematical model, careful calculations and a deep fundamental understanding of the physics underlying the problem. Being among

– from the initial idea, through the first prototype and redesign, to final optimisation. Which stage proved to be the most demanding, and why?

A: The beginning of the project is always the most difficult and demanding stage because it requires students to make a sudden transition from a standard academic environment to the relentless pace of a startup. In lectures and exams, problems are structured and clearly defined. Here, at the beginning of the project, they are faced with a blank sheet of paper and a period of just ten months in which they must develop a fully functional, complex device. At first, students often cannot even grasp how far they need to progress or everything they need to accomplish within that timeframe. That is why the beginning is the most challenging stage.



Aleksandar Milić

Mentor of the H-Bridges team at the School of Electrical Engineering at the University of Belgrade



the top teams alongside leading universities from around the world is a clear signal that our students at the School of Electrical Engineering possess knowledge that is competitive at the highest global level.

Q: The work on the bidirectional on-board charger lasted almost a year and went through several stages

This is when we have to develop a system-level solution, get to know one another, build trust and embrace a significantly more advanced and faster pace of work. Once that foundation is established, all subsequent stages become achievable.

Q: The competition requirements were very strict – efficiency above

92 percent, a power density of at least 2 kW/L, galvanic isolation, a HiPot test... Which of these requirements posed the greatest engineering challenge for the team?

A: The greatest challenge was not any single requirement, but rather the fact that they had to be met simultaneously. Power electronics is a science of trade-offs. If we had to single something out, the biggest challenge was the requirement for high power density. It may sound counterintuitive, but from a hardware perspective, the basic components of a charger are conceptually the same whether you are designing a system for 1 kW or 100 kW. However, from a mathematical and physical standpoint, achieving high power density at lower power levels is far more difficult. Since the competition task is essentially a scaled-down student prototype with a lower nominal power rating, the physical dimensions of the enclosure and components become an extremely restrictive factor. It was exceptionally challenging to reduce the prototype's dimensions



while maintaining top-level performance.

Q: Is the team considering protecting the developed solution through a patent, and do you see a realistic opportunity for this technology to be further developed outside the academic environment, perhaps through cooperation with industry or a spin-off company?

A: Protecting intellectual property is a logical step, but we have to be realistic. Students cannot secure funding for development and the project, develop a complex device and, at the same time, learn about patent law within a single year. The School of Electrical Engineering does not include mandatory courses on intellectual property protection in its undergraduate curriculum, so students generally lack even basic knowledge in this area. It is the responsibility of institutions to provide them with a clear pathway for protecting their work, and this is something we began actively working on at the laboratory level last year.

One example is our startup H4SOUND, which emerged from the H-Bridges team during the 2023/24

Every year, the Laboratory welcomes new students and introduces them to an established system of work and organisation, which ultimately produces what the public sees as the H-Bridges team

season. After developing and upgrading the device from a student prototype to the commercial H4PA-2-150-T model, they successfully protected the intellectual property by registering a description of the conceptual design as a copyrighted work with the Intellectual Property Office of the Republic of Serbia. However, serious protection at the global level, such as international patents, can currently only be pursued with the support of industry partners, as our academic institutions still lack sufficiently developed mechanisms and human resources to handle such complex processes.



This year, as in every other year, the goal of the Laboratory and the School is for the H-Bridges team students to continue developing the solution after the competition. The model we have established within the H-Bridges team is gradually producing results. Over the past eight years, as many as four startups have emerged in Serbia from students who were members of the team, two of which are direct continuations of the IEEE competition.

Q: The H-Bridges team has been achieving notable results at international power electronics competitions

for years. What do you consider the key to this continued success – is it the way the team works, the selection of members, the mentoring approach, or something else?

A: The key is the system. Formally and from an administrative and financial perspective, the H-Bridges team is an extracurricular activity within the Laboratory for Digital Control of Converters and Drives (DPP Laboratory) at the School of Electrical Engineering, University of Belgrade. Every year, the Laboratory welcomes new students and introduces them to an established system of work and organisation, which ultimately produces what the public sees as the H-Bridges team. This system is maintained by the Laboratory staff. In addition

together with the establishment of clear procedures and working mechanisms, provides continuity. However, what distinguishes top-level teams is teaching students to critically question every solution, while maintaining clearly defined high academic and practical standards. Every engineering decision must go through a phase of detailed planning, mathematical and simulation-based verification, followed by experimental testing in the laboratory. Finally, the cycle is completed through evaluation and an assessment of mistakes, which then forms the basis for a new plan. Once students master this cycle, success in competition becomes a logical consequence of following the right engineering process.

required by the competition. Naturally, the hardware (HW), software (SW), and public relations and fundraising (FR/PR) sub-teams remain our standard pillars. In practice, coordination resembles the way leading technology companies operate. The hardware and software sub-teams must coordinate requirements and constraints on a daily basis so that we do not end up with burnt components on the workbench. On the other hand, the operational FR/PR team is the engine that secures the necessary resources. Without their logistical support, even the best-engineered hardware would never make it to the final testing stage at the competition.



Q: Preparations for the new season begin as early as September, when new members join the team. What would you say to students considering joining the H-Bridges team, and what kind of candidates are you primarily looking for?

A: My message to students is simple: step outside your comfort zone and come into the laboratory. We are not looking for candidates who already know everything, nor are we looking for students with high grade averages. There is no entrance interview, testing or any kind of elimination criteria for joining the team – everyone is welcome. The profile that H-Bridges values most is characterised by three qualities: intellectual curiosity, a strong work ethic and team spirit. We will teach them all the technical skills, from hardware design to coding. What we cannot teach them is a passion for solving problems and a desire to compete with the best in the world. If they possess those qualities, we at the Laboratory for Digital Control of Converters and Drives believe that H-Bridges is the best path for launching their engineering careers, and that is why we are immensely proud to lead this project.

Interview by Milena Maglovski

to transferring technical knowledge, they help students and pass on their experience in administration, legal matters, organisation, logistics, marketing and, most importantly, fundraising, which is essential to making the project possible. Each year, the Laboratory members strive to improve the research infrastructure, facilities and equipment, administrative mechanisms, and more.

The system is based on three pillars: building institutional memory, developing critical thinking, and rigorous planning and evaluation processes. The transfer of knowledge from senior to junior members,

Q: The team is divided into three sub-teams: hardware and PCB design, firmware and control, and fundraising/public relations. How crucial is this division to the success of the project, and what does coordination between these groups look like in practice?

A: In modern engineering, systems are becoming too complex for individuals to handle alone, so dividing responsibilities into operational and technical tasks is essential. It is important to emphasise that the internal division of these tasks among sub-teams is organised differently each year, depending on the specific characteristics and type of project



CHARGE&GO AND SUNGROW: PARTNERSHIP FOR A NEW GENERATION OF CHARGING INFRASTRUCTURE

Successful development of electromobility requires more than simply increasing the number of chargers – it is important that users can rely on charger availability and reliable service at carefully selected locations. Recognizing the need for faster development of such charging infrastructure, Charge&GO and Sungrow have signed a partnership agreement to combine their expertise

and technologies. This summer, the first Sungrow chargers were put into operation in Serbia as a result of the cooperation between the two companies, which have announced that they will continue to develop the partnership through further network expansion, not only in Serbia but also across Western Balkan markets.

At Sungrow, the company's experience and long-standing presence in the domestic market are highlighted

as particularly important to the cooperation with Charge&GO. This partnership brings together in-depth knowledge of local market conditions and user requirements with the advanced technology of one of the world's leading manufacturers of electromobility solutions. Sungrow representatives also emphasized Charge&GO's expertise in identifying and selecting key locations for charger deployment.

The OMV filling station in Palić was selected as the location for Serbia's first Sungrow DC charger, with a capacity of 110 kW, operating as part of the Charge&GO network. During the summer, a second location joined the network – the OMV filling station in Subotica, where another Sungrow charger was installed. The choice of this location is particularly significant because it lies on an important transit route used daily by many travelers between Central and Southeastern Europe. The charger can therefore serve not only the needs of domestic electric vehicle drivers, but also those traveling through Serbia toward other parts of the region.

Company representatives announced that the cooperation will

continue through further network expansion. As for OMV stations, the first phase includes approximately 18 new locations where Sungrow chargers will be installed.

One of Sungrow's advanced technological solutions is already available to drivers charging their vehicles in Subotica. The IDC180E model uses proprietary power modules and a patented isolated air-cooling system, a technology that Sungrow also applies to its inverters. By separating the electrical components from the power modules, the system reduces heat buildup, enabling high efficiency even at temperatures above 40°C. Efficiency is close to 97 percent, and IP65 protection further simplifies maintenance because the charger

lacks filters that require regular replacement.

Another advantage of the system is the ability to integrate with Sungrow's battery energy storage system. This is particularly useful at locations where the power grid cannot provide sufficient connection capacity. In practical terms, if only 30 kW is available at a site, a 125 kW battery can make up the difference, providing a total charging capacity of 150 kW.

The cooperation between Charge&GO and Sungrow will soon also take on a regional dimension. The first major step beyond Serbia will be in North Macedonia, where five new chargers are planned, two of which – with capacities of 150 kW and 120 kW – are expected to be commissioned soon.

The Next Step – 300 kW and 400 kW Chargers

As the number of electric vehicles grows, user requirements will change as well. Fast charging is no longer only a concern for passenger cars but is increasingly a concern for the electrification of freight transport as well.

At Sungrow, they therefore expect demand in the Serbian market for chargers with capacities between 300 kW and 400 kW to increase. They see particular potential in transit traffic and electric trucks. Serbia is located on one of Europe's important transport corridors, making the ability to rapidly charge a vehicle with a large amount of energy increasingly important.

Such development will require a completely different approach to infrastructure – from available grid connection capacity and parking space to the way charging stations themselves are organized. This creates opportunities for new projects and further expansion of cooperation between Charge&GO and Sungrow.

Prepared by Katarina Vuinac



A SUSTAINABLE FUTURE FOR CONSTRUCTION STARTS WITH CEMENT



When we talk about sustainable construction, we most often think of energy-efficient buildings, green roofs, rainwater harvesting, or renewable energy sources. However, long before a building is equipped with solar panels or an energy-saving system, its sustainability begins with the materials from which it is built. At the very foundation of modern construction is concrete – according to data from the United Nations Industrial Development Organization (UNIDO), the second most widely used material on the planet, after water.

Its key ingredient is cement, the production of which is responsible for a significant share of global carbon dioxide emissions. The reason is not only the energy-intensive production process but also the enormous quantities of cement produced to meet the needs of worldwide urbanization and infrastructure development. As a result, the cement industry is estimated to account for around 8 percent of global CO₂ emissions, making it one of the key sectors in the construction industry's decarbonization.

For this reason, the development of low-carbon cement is becoming one of the most important avenues for reducing emissions in construction. The challenge is not only the large amount of energy required to produce cement, but also the production process itself. Limestone is heated in kilns to extremely high temperatures, around 1,400 degrees Celsius, during which carbon dioxide is released as an unavoidable part of the process. Reducing emissions in the cement industry is therefore considerably more complex than in many other sectors, particularly in developing countries that face limited access to cleaner energy sources, new technologies and the financial resources needed to modernize production.

Aware of the scale of this challenge, the cement and concrete industry has in recent years been working intensively on developing solutions that will enable emissions to be reduced without compromising the quality or affordability of one of the most important construction materials. The Global Cement and Concrete Association (GCCA) is the largest non-profit organization bringing together cement and concrete producers worldwide, including the majority of production capacity outside China, as well as an increasing number of leading Chinese manufacturers. Its members have committed to reducing and ultimately eliminating CO₂ emissions associated with concrete production.

According to the organization, the industry has already made some progress over the past three decades, with a 20 percent reduction in carbon dioxide emissions from cement production. The cement

industry currently emits more than 2.5 gigatons of CO₂ annually. Most emissions are generated during the production process itself – as a result of heating limestone and burning the fuels required to operate cement kilns.

Net-Zero Emissions by 2050

According to the GCCA Roadmap to Net Zero by 2050, the plan is to accelerate CO₂ emissions reductions by 2030 through a range of actions and initiatives. The target is to reduce emissions per ton of cement by 20 percent and per cubic meter of concrete by 25 percent compared with 2020 levels.

To achieve this, the industry plans a range of measures. One of them is the introduction of alternative materials, known as Supplementary Cementitious Materials (SCMs), to reduce the use of clinker – the main component of cement and the one whose production is most responsible for emissions. Initially, fly

The decarbonization of concrete is particularly important given its widespread use and significant role in modern society; without it



ash and granulated slag will be used most extensively to replace part of the clinker, but their availability is expected to decline over time due to changes in the energy sector and steel production, from which these by-products originate. Instead, other materials, such as ground limestone and calcined clay, are expected to become increasingly prevalent.

Further emissions reductions will also require the gradual phase-out of fossil fuels in production, through greater use of alternative fuels and a transition to cleaner energy sources. At the same time, new technologies are being developed to reduce emissions that cannot be eliminated simply by replacing fuels or materials. Since some emissions are not related to the energy source but arise from the production process itself, carbon capture, utilization and storage (CCUS) technology is becoming increasingly important, enabling CO₂ to be captured before it reaches the atmosphere. The carbon dioxide can then be used in other industrial processes or permanently stored.

In addition to changes in cement production itself, emissions can also be reduced through more efficient concrete design and use. Careful structural planning can enable the use of smaller quantities of material without compromising the safety and functionality of buildings, while the use of recycled materials, the reuse of construction elements, and extending the service life of buildings can make further contributions. In this way, cement and concrete become an important part of the circular economy, rather than simply materials that are produced and discarded after use.

After 2030, rather than focusing on individual measures, the industry will increasingly focus on the comprehensive transformation of production. Reducing the share of clinker, using alternative fuels and developing new materials will continue to



contribute to emissions reductions, but technologies such as carbon capture, utilization and storage (CCUS) will play the most significant role in achieving net-zero emissions.

In addition, investment in innovation and the development of new technologies will be crucial for the further decarbonization of the industry. Among the solutions expected to see wider application from 2040 onwards are green hydrogen, which could replace part of the fossil fuels used in production, and the electrification of cement kilns, which would



further reduce emissions associated with energy consumption. However, as emphasized, electrification will not solve all the challenges, as process emissions generated during clinker production will remain – making additional solutions such as CCUS technology necessary.

In the future, one long-term solution could also be the development of concrete with a negative carbon balance. The idea is to use carbon dioxide captured from industrial processes in concrete production, where it is permanently bound into the material through carbonation. If the amount of CO₂ thus bound exceeds the emissions generated during production, concrete could have a negative carbon balance – meaning that it would remove more CO₂ than it emits over its life cycle. At present, however, this technology is still in its early stages of development.

In addition to changes in cement production itself, emissions can also be reduced through more efficient concrete design and use

Concrete Embedded in the Sustainable Development Goals

The decarbonization of concrete is particularly important given its widespread use and significant role in modern society; without it, it is difficult to imagine the development of infrastructure, cities, and energy systems. In the broader context of sustainable development, the GCCA highlights the contributions of cement and concrete to achieving the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015. These goals address a wide range of global challenges – from eradicating poverty and ensuring quality education to developing sustainable cities, providing access to clean energy, protecting the environment, and combating climate change.

Some examples illustrate how closely cement and concrete are linked to various aspects of sustainable development. The construction of roads and other infrastructure improves food producers' access to markets and provides people with easier access to educational institutions and other essential services.

At the same time, the cement and concrete industry represents a significant source of direct and indirect employment. Concrete is one

of the key materials used for the transport and distribution of water, and it also plays an important role in the development of clean energy – from the construction of hydropower plants and wind turbine foundations to electricity transmission infrastructure. Its strength and resistance to water and fire further help protect communities from natural disasters and the impacts of climate change. The cement and concrete industry is also increasingly becoming part of the circular economy, as it uses by-products from other industries as raw materials or fuels, while concrete itself can be reused or recycled.

To achieve this transformation, the GCCA emphasizes that technological progress in the industry must be accompanied by appropriate policies, investment, and public-sector support. Among the key areas identified by the organization are creating conditions for greater use of supplementary cementitious materials and blended cements, developing standards that enable the application of low-carbon solutions, and establishing mechanisms that will stimulate market demand for lower-emission products.

The GCCA particularly emphasizes the importance of a stable carbon pricing system that provides companies with the certainty needed for long-term investment in decarbonization while preserving industry competitiveness. The wider deployment of technologies such as CCUS also requires support through public funding, the development of infrastructure for CO₂ transport and storage, access to clean energy, and the creation of market demand for low-carbon products. According to its recommendations, achieving net-zero emissions by 2050 will require joint action by industry, governments, and all stakeholders across the value chain.

Prepared by Katarina Vuinac



Photograph: Pixabay/Arodsje



Your path to energy independence starts here!

**For the best
energy solution,
rely on our
team for design,
consulting and
obtaining all
documents**



Realized projects
in numbers:



250 MW
of solar
power plants



66 MW wind
power plants



30 MW
CHP and
gas power
plants

More than
500 companies
in Serbia and the
region have achieved
their energy goals
with our help

Creation of feasibility studies with conceptual design

Development of projects for obtaining permits and
contractor projects for the construction and use of
renewable energy sources

Consulting and obtaining all conditions, consents and permits
for RES, as well as preparation of all types of project
documentation (conceptual design, preliminary design, main
design, and as-built design)

Consulting in preparing and introducing energy management
systems in industrial companies and at the local level
(municipalities and cities)

Creation of business plans, investment studies
and/or financial and economic analyses

Where you see the numbers, we see the way to save



 103 Bulevar oslobođenja st.
11010 Belgrade

 +381 11 39 62 359
+381 11 77 04 566

 info@ceefor.co.rs

 www.ceefor.co.rs



DELIBLATO SANDS: BEFORE THE FLAMES AND AFTER

The Sands are not a desert, but sand is one element they have in common. Deliblato Sands is a world of its own, with a long geological history and distinctive features that set it apart from the surrounding landscape. The mere fact that such a vast expanse of sand and an extensive dune system lie deep in the continental interior, far from the sea, makes this area unusual. The Provincial Institute for Nature Conservation describes it as the largest European area formed by deposits of aeolian sand with pronounced dune relief, while the public enterprise Vojvodinašume states that the nature reserve covers nearly 35,000 hectares. In the midst of the Vojvodina plain lies a landscape of gentle rises and depressions, grasslands, shrubs and forests, while beneath the vegetation lies the foundation of the entire

Research has highlighted the high fire vulnerability of coniferous trees, which accounted for a large share of the forests affected by fires in Deliblato Sands



landscape – what water carried in and wind shaped: sand.

Its origins should not be oversimplified by claiming that the Pannonian Sea once covered this area. Although the sea is part of the broader geological story, the present-day appearance of these sands is much more recent. According to the Serbian Encyclopedia, the sand originated mainly from material carried by watercourses from the Carpathians, while some came from Danube deposits and older sandy formations. During periods when these surfaces were sparsely covered by vegetation, winds lifted, transported, and redeposited the sand, gradually shaping the dunes and undulating terrain we recognize today.

According to data from the Provincial Institute for Nature Conservation, more than 900 plant species, subspecies and varieties have been recorded in the area, including the Banat peony, Pančić's wormwood,

sand everlasting and juniper. Characteristic animal species include the eastern imperial eagle, Banat falcon, European souslik, steppe lemming, European mole rat and steppe polecat, while part of the reserve along the Danube provides an important habitat for wetland birds. For some of these species, Deliblato Sands is one of the few remaining habitats in Serbia.

Yet the green landscape of Deliblato Sands today is not what it once was. At the end of the 18th century, according to the Serbian Encyclopedia, logging, cultivation, and other interventions caused the sand to become mobile again, with the wind carrying it across vast areas. As a result, systematic vegetation restoration and afforestation began in the early 19th century to stabilize the sand and prevent further movement. In this way, vegetation restoration and afforestation gradually stabilized shifting sand areas.

Afforestation solved one problem, but as extensive forest areas developed, a new challenge emerged. Research has highlighted the high fire vulnerability of coniferous trees, which accounted for a large share of the forests affected by fires in Deliblato Sands. For many years, the most severe historical example was the 1996 fire. According to data from Vojvodinašume, the fire affected 3,815.40 hectares in total, including 2,235.01 hectares of forest.

Following that fire, the protection system was further improved. Today, it includes video surveillance for early fire detection, firebreaks and cleared fire-control strips, and other preventive measures. Nevertheless, this year's events have raised new questions.

One challenge in such circumstances is the wind rose characteristic of this area. During major wildfires, the problem is not only

wind strength but also its variability in direction. Although wind is one of the landscape's main "builders", during a fire it becomes a formidable adversary for those fighting the flames.

From Several Hectares to Thousands of Hectares

The fire was first detected on 21 July, when video surveillance recorded it at around 1 p.m. in the "Deliblatski pesak – Vrela" Forest Management Unit. Authorities brought it under control around 9 p.m. the same day.

The problem resurfaced on 26 July. The wind rekindled the smoldering fire, which spread across an additional five hectares. A helicopter operated by the Ministry of Internal Affairs was also deployed to assist with firefighting. At that point, estimates indicated that 5.6 hectares had been affected by a low, or surface, fire, while 7.4 hectares had been affected by a crown fire. The fire was brought under control again, but it flared up once more on 2 August.

The turning point came on 5 August. From that day onwards, the fire was no longer a series of isolated,

short-lived flare-ups, but the beginning of a weeks-long battle against the flames. On 5 August alone, the fire was reported to have affected approximately 500 hectares. By 6 August, high temperatures and winds of varying strength and direction had increased the burned area to more than 940 hectares. The intensity of the fire was such that a pyrocumulonimbus cloud was also recorded – a thunderstorm cloud that can form above exceptionally powerful fires.

By 9 August, the estimated affected area had grown to around 1,700 hectares, while several days later the fire was temporarily brought under control.

However, the danger had not passed. According to a further assessment by Vojvodinašume dated 17 August, the fire had affected 3,960 hectares, including 3,111 hectares of forest. The fire continued to spread after that date.

The situation deteriorated particularly around 20 August, when the fire approached the settlements of Grebenac and Kajtasovo. To allow wild animals to leave the endangered area, authorities opened gates and



The most severe historical example was the 1996 fire. According to data from Vojvodinašume, the fire affected 3,815.40 hectares in total, including 2,235.01 hectares of fores





sections of fencing in the hunting ground, and established additional watering points.

According to the data available so far, the scale of this year's fire has already surpassed the officially recorded total burned area from 1996.

International Assistance

As the fire continued and weather forecasts warned of further high temperatures, Serbia activated the

European Union Civil Protection Mechanism on 21 August. Through the European assistance mechanism, four rescEU Black Hawk helicopters were deployed – two from the Czech Republic and one each from Slovakia and Romania.

International firefighting and rescue teams also arrived. Romania deployed 69 firefighters and rescuers with 15 vehicles, while the German team consisted of 56 personnel

In the final days of August, the situation in Deliblato Sands was considerably calmer. On 28 August, Vojvodinašume reported no new fires in 80 hours, and that satellite monitoring systems had detected no new hotspots. By the end of the month, the situation had stabilized further.

However, early September showed that the danger had not yet passed. Underground hotspots continued to emerge, and strong winds reignited fires in some areas, prompting firefighting teams to continue their interventions and maintain a presence on the ground.

While heightened preparedness remains in place, one of the most important unanswered questions concerns what will only become apparent once the flames have completely died down, the sand has cooled, and the situation has settled – how deeply the burned areas of the Sands have been altered and how much time will be needed for the affected forest and other plant communities to recover.

The ecological consequences of a fire of this scale are significant and long-lasting, particularly given the value and unique character of the Deliblato Sands ecosystem. However, the consequences also have a substantial economic dimension. Firefighting operations required large quantities of fuel and water for days, as well as the deployment of numerous personnel, vehicles, machinery and other resources, while site rehabilitation and the restoration of forests and other plant communities over many years will bring further challenges.

The full cost of wildfires of this magnitude therefore cannot be measured solely in terms of burned hectares and damage to plant and animal life. It must also include the resources consumed during the response, as well as those required for years to come to restore the affected area.

Prepared by Milica Vučković



and 24 vehicles. By 25 August, both the Romanian and German ground forces were operating in Deliblato Sands, alongside helicopter crews from the Czech Republic, Romania and Slovakia.

Separately from assistance provided through the European mechanism, a Russian Ilyushin Il-76 aircraft, with a water-carrying capacity of 42 tons, also took part in firefighting operations. The aircraft was also deployed to other major wildfire sites across Serbia.

After weeks of fighting the fire, local firefighters, Ministry of Internal Affairs personnel, Serbian Armed Forces personnel, volunteer fire brigades, Vojvodinašume employees and local residents were joined by significant international forces.



SLOVENIA AND GREEN BUILDING: A ROADMAP FOR A SUSTAINABLE FUTURE IN THE REGION

Sustainable construction encompasses more than energy-efficient buildings; it includes planning a building's entire life cycle, selecting materials with lower environmental impact, applying circular economy principles, and complying with increasingly demanding European regulations. In this transformation, sustainable building associations play an important role by accelerating the green transition through education, international cooperation, and connecting stakeholders across the sector. We discussed Slovenia's experiences that could be valuable for the region with Dr. Iztok Kamenski, President of the Slovenian Green Building Council (GBC Slovenia), which promotes sustainable solutions in the construction sector by bringing experts together and facilitating knowledge transfer. The association's work focuses on the circular economy, reducing carbon footprints, life cycle assessments (LCA), Environmental Product Declarations (EPDs), and implementing European standards and regulations in practice.

To be truly sustainable, we must protect fertile land, promote local food production, preserve rural life, and build high-quality, energy-efficient communities

Q: Where Does Slovenia Stand Today Compared with the European Union When It Comes to Green and Sustainable Construction?

A: In terms of green and sustainable construction, Slovenia is somewhere in the middle compared with the European Union. We have some very good individual examples, high-quality construction material manufacturers, excellent experts, and growing knowledge of sustainable construction. On the other hand, implementing such solutions is often slower than in countries such as Denmark, the Netherlands, Sweden, or Austria, where the circular economy, low-carbon construction, and building life cycles are already integral to everyday practice.

However, we must not view sustainability solely through the lens of buildings. Agriculture, food security, and rural development are equally important. Slovenia is losing high-quality agricultural land to construction; many smaller farms are ceasing operations; young people are moving from rural areas to cities, while many villages are aging and becoming increasingly deserted. To be truly sustainable, we must protect fertile land, promote local food production, preserve rural life, and build high-quality, energy-efficient communities.

Sustainability is not merely about reducing energy consumption or CO₂ emissions. It represents a balance between the environment, the economy, and people's quality of life. Without strong rural development, successful agriculture, and thoughtful spatial planning, even the greenest buildings will not solve the long-term challenges facing society.

Q: How Ready Is the Construction Sector in Slovenia and the Region for the Transition to Sustainable and Circular Construction?

A: In my opinion, Slovenia's construction sector is much better prepared

for the transition to sustainable and circular construction than is often perceived. Construction material manufacturers are developing innovative, low-carbon and circular products; designers and contractors have increasingly extensive knowledge, while investors are gradually recognizing the long-term benefits of sustainable solutions.

The main challenge today is no longer industry readiness, but the market. Sustainable products often have a higher upfront cost, while buyers still too often decide based on the lowest initial investment rather than a building's total life-cycle costs.

Environmental Product Declarations (EPDs) also represent a particular challenge. For many manufacturers, preparing an EPD is a significant financial burden, while the cost of developing one is often disproportionate to the price of an individual product or the scale of its sales. This is particularly challenging for small and medium-sized enterprises, for which it is more difficult to justify such an investment, even when they offer high-quality and sustainable products.

Therefore, accelerating the transition to circular construction will require not only the development of new technologies, but also the creation of appropriate market conditions: public procurement must place greater emphasis on quality and environmental performance, the use of Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) should be encouraged, while administrative and financial barriers for companies investing in sustainable products and certification should be reduced. Only then can the market fully harness the potential Slovenia's construction sector already has today.

Q: What Are the Biggest Challenges in This Process, and How Can the Construction Sector Prepare for New



Iztok Kamenski

President of the Slovenian Green Building Council (GBC Slovenia)

European Union Requirements and Standards?

A: The biggest challenges are no longer primarily technological in nature, but are instead related to changing mindsets and adapting to new European requirements. European legislation is placing increasing emphasis on the entire life cycle of buildings, reducing carbon footprints, material circularity, digitalization, and the use of verifiable data on environmental impacts, such as EPDs, LCAs, and Digital Product Passports. This means that all stakeholders – from manufacturers, architects and designers to contractors and investors – will need to cooperate even more closely from the early stages of planning.

The construction sector can best prepare for these changes through continuous professional education, knowledge transfer and the exchange of good practices. GBC Slovenia plays an important role in this regard, organizing professional conferences, seminars, and workshops every year with partners such as ZAG, GI ZRMK, EUTRIP, JUB, XELLA, and others, where we present the latest developments in European legislation,

technological innovations, and practical examples of sustainable and circular construction.

European projects such as Building Life and TOP CLever also contribute significantly. The Building Life project focuses on accelerating the decarbonization of the built environment, introducing whole-life-cycle assessment of buildings, and preparing professional recommendations for implementing European legislation. The TOP CLever project strengthens the knowledge of professionals, students, and contractors in sustainable and circular construction, while promoting sustainable materials, innovative solutions, and digital tools in construction practice. Both projects significantly contribute to preparing Slovenia's construction sector for future requirements arising from the European green transition.

The Chamber of Engineers of Slovenia (IZS) and the Chamber of Architecture and Spatial Planning of Slovenia (ZAPS) also contribute to improving professional competencies by requiring members to undergo regular professional training and collect continuing education credits to maintain their licenses. This system encourages continuous improvement of knowledge and enables Slovenian professionals to keep pace with the development of European standards and apply them successfully in practice.

Q: How Ready Are Investors Today to Consider the Entire Life Cycle of a Building – from the Selection of Materials and Construction to the Possibility of Reuse and Recycling?

A: Investors are increasingly aware of the importance of sustainable construction and considering the entire life cycle of a building, but their decision-making is often constrained by the financial resources available. Their primary task is to deliver the investment within the planned



budget, so initial investment cost remains a key factor when selecting materials and technologies.

Although sustainable solutions often involve a higher upfront cost, they can result in lower operating and maintenance costs over a building's life cycle, as well as higher property value. Slovenian and European legislation is increasingly guiding investors toward this way of thinking by gradually introducing requirements related to energy efficiency, reducing carbon footprints, the use of sustainable materials, and the circular economy. Requirements are expected to become even more stringent in the coming years, making whole-life-cycle assessment of buildings an increasingly important part of investment decisions.

Q: Is sustainable construction still a more expensive investment, or does it prove to be a more economically efficient solution over the entire life cycle of a building?

A: Sustainable construction can be somewhat more expensive at the initial investment stage, but over the



entire life cycle of a building it generally proves to be a more economically efficient solution. Lower energy and maintenance costs, together with a longer building lifespan, generate long-term savings.

At the same time, data availability remains a key challenge. For a high-quality life-cycle assessment, construction products need to be supported by LCA analyses and Environmental Product Declarations (EPDs), which are still not sufficiently available on the Slovenian market. The main



Sustainable construction can be somewhat more expensive at the initial investment stage, but over the entire life cycle of a building it generally proves to be a more economically efficient solution

reason is the high cost of preparing them, which for many manufacturers is not proportionate to the product's value or sales scale. Therefore, beyond regulatory requirements, it will be necessary to create conditions that encourage LCA and EPD preparation and enable faster development of sustainable construction.

Q: What Can Western Balkan Countries Learn from Slovenia's Experience in Developing Green and Circular Construction?

A: Above all, Western Balkan countries can take from Slovenia's experience the understanding that the transition to green and circular construction does not happen overnight. It is important to progress through smaller, well-planned steps and gradually introduce regulatory requirements, professional training and financial incentives.

Raising awareness among the public, investors, and all stakeholders involved in the construction process about the long-term environmental and economic benefits of sustainable construction also plays a key role. Only through cooperation between government, the professional community, the business sector, and educational institutions is it possible to create the conditions for a successful, long-term transition to a circular economy.

Q: To what extent will European regulations and new standards, such as requirements for more energy-efficient and low-carbon buildings, transform the construction sector in the region?

A: European regulations will significantly reshape the construction

sector across the region in the coming years. The focus will no longer be solely on building energy efficiency, but also on reducing CO₂ emissions throughout the entire life cycle, using sustainable materials, improving the circularity of construction products, and digitizing building-related data. This will require all stakeholders to acquire new knowledge, cooperate more closely, and adapt their business processes.

International cooperation will also play an important role in this process. Projects such as TOP CLeVeR facilitate the exchange of knowledge, good practices, and experience among partners from different European countries, contributing to the faster transfer of innovations and European standards into national contexts. Such cooperation is particularly important for Western Balkan countries preparing to gradually align their legislation with European requirements.

At the same time, it will be necessary to consider each country's level of economic development and its financial capacity. Although there is clear willingness to transition to sustainable construction, limited resources available to investors, companies, and the public sector may delay the introduction of certain regulatory requirements or their gradual implementation. Therefore, a successful transition will be possible only through coordinated regulation implementation, appropriate financial incentives, and a sufficiently long adjustment period.

These changes therefore represent not only an obligation but also a significant opportunity for development. Companies that invest in innovation, low-carbon product development, LCA analyses, EPDs, and international cooperation in a timely manner will be more competitive in the long term in both domestic and European markets.

Interview by Jasna Dragojević

WE BUILD SOLAR POWER PLANTS TOGETHER, WE BUILD THE FUTURE

- ✓ **MT-KOMEX BH**, as part of the group **MT-KOMEX d.o.o. Belgrade** is one of the leaders in the design and construction of solar power plants, with extensive experience and numerous successfully completed projects.
- ✓ The company actively supports clients in preparing for the changes introduced by the CBAM mechanism, offering guidance in meeting new regulatory requirements through concrete steps and expert consulting.
- ✓ By transitioning to solutions that reduce carbon dioxide emissions, we help pave the way toward sustainable operations and the green transition.
- ✓ Our team of experts provides a comprehensive turnkey approach, covering every stage of the project – from planning and power plant design, through equipment delivery and construction, to system functionality testing and maintenance.
- ✓ We believe that solar energy is the right solution for achieving energy independence – see for yourself.



MT-KOMEX BH
ENERGY SOLUTIONS D.O.O.



www.mt-komex.ba



info@mt-komex.ba



+(387) 64 **40 26 295**





FROM THE LOCAL COMMUNITY TO THE ENERGY GRID

Citizen energy is no longer simply an idea of households installing solar panels on their rooftops. The path from a good idea to a system that truly works is far from simple, involving regulatory uncertainties, administrative procedures, and technical challenges.

That is precisely why the experiences of those who have already embarked on this journey, and even made significant progress, are particularly interesting. One such example comes from Croatia, where the work of the Rijeka-based “Bez granica” association led to the establishment of the North Adriatic Energy Community. Today, it brings together stakeholders from Primorje-Gorski Kotar and Istria counties, and in July this year, its members achieved the first energy exchange. Another important part of its further development is the European

**The members of the
North Adriatic Energy
Community are citizens,
entrepreneurs and local
government units from
the Primorje-Gorski
Kotar and Istria counties**

DISCOVER project, which we discuss in more detail below.

We spoke with Damir Medved, a Master of Electrical Engineering and President of the “Bez granica” association, about how the initiative came about and how the energy community has been implemented.

Q: To begin, could you introduce us to the “Bez granica” association – when and how was it founded, and how has its work evolved over time?

A: The “Bez granica” association was founded in 2012 in Rijeka, initially focusing on the development of citizen initiatives and the preservation of the historical heritage of our area. We participated in the European Capital of Culture Rijeka 2020 project, established the Drenova Local Heritage Museum, and set up the Drenova Community Center, which we still manage today and where we also implement projects in the energy sector.

The topic of citizen energy and energy communities became a more active part of our work in 2021, when we recognized that local residents needed practical support to participate in the energy transition – from understanding regulations to implementing photovoltaic projects. From there, we began organizing popular educational lectures and events, such as solar evenings and solar barbecues, as well as professional cooperation with the University of Rijeka. An added value of our work is the fact that a large number of the

association’s members have academic backgrounds in technical and economic fields.

Today, our main focus is providing technical and administrative support to energy communities, implementing EU projects such as DISCOVER, developing digital tools, and educating relevant stakeholders.

Q: How did the initiative to establish the North Adriatic Energy Community emerge from the association’s activities, and what was the main reason for launching the community?

A: The idea of establishing the North Adriatic Energy Community emerged directly from our fieldwork with citizens and local stakeholders through the “Bez granica” association. Through the development of the Drenova Community Center, we created infrastructure to implement numerous projects that encourage greater citizen participation in local community development.

Through communication with interested citizens in Rijeka and beyond, as well as through our research, we identified a clear interest in the shared use of renewable energy sources. At the same time, it became apparent that citizens lacked the formal framework and institutional support needed to launch such initiatives independently.

That was precisely the main reason for establishing the North Adriatic Energy Community (EZSJ): to enable citizens, through a formal



Damir Medved

Master of Electrical Engineering
and President of the “Bez granica”
association

and transparent structure, to invest in renewable energy sources, achieve tangible savings, share energy produced by photovoltaic installations, and contribute to greater energy independence for the local community.

Q: How does the North Adriatic Energy Community work in practice today?

A: The members of the North Adriatic Energy Community are citizens, entrepreneurs and local government units from the Primorje-Gorski Kotar and Istria counties. Those interested in joining the community do so through our website; the management team then reviews the application, and the General Assembly formalizes the admission of new members.

Membership fees are symbolic, as the intention is for the community’s operating costs to be covered primarily through Croatian and European projects and, in the future, through fees related to energy metering and sharing.

So far, through the community’s work, we have brought together 29 participants with a total of 220 kW of installed photovoltaic capacity, and





Hundreds of citizens have been trained through workshops, and it is particularly important to us that we have succeeded in further raising awareness of the importance of the energy transition among representatives of local and regional authorities as well

we achieved the first energy exchange in July this year. For us, this confirms that energy sharing can work in practice.

Q: How did the DISCOVER project become part of your activities, what is the role of the “Bez granica” association in its implementation, and how is the North Adriatic Energy Community involved in the project?

A: The DISCOVER project, funded through the European Union’s LIFE – Clean Energy Transition program, became part of our activities in 2023, following a successful application submitted together with partners from France, Austria, Italy and Bulgaria.

The “Bez granica” association participates in the project as the Croatian partner responsible for activities on the ground – from providing technical and advisory support to energy communities to developing digital tools and delivering training. One of these tools is ECASS, an energy analytics platform developed within the project.

Our activities cover Primorje–Gorski Kotar County, where we established a Support Center for Citizen Energy Projects within the Drenova Community Center, which has operated for more than a year. The Center is not intended solely for initiatives from our county; it is also open to exchanging experiences with partners and delegations from the region and abroad, including Serbia, North Macedonia and Bosnia and Herzegovina.

The North Adriatic Energy Community, on the other hand, uses these services in practice – applying the tools developed, participating in training sessions and testing the models created through the project, and then providing us with feedback on how they perform under real-world conditions.

Q: Which achievements of the DISCOVER project to date would you particularly highlight, and what else is planned to be accomplished?

A: So far, through the DISCOVER project, we have developed a whole range of software and analytical tools

that enable the planning and implementation of energy communities, as well as the simulation of their operational performance and impacts.

In addition, hundreds of citizens have been trained through workshops, and it is particularly important to us that we have succeeded in further raising awareness of the importance of the energy transition among representatives of local and regional authorities as well.

By the end of the project, we plan, with our support, to establish several more new energy communities and to further deepen cooperation with interested cities and municipalities.

Q: Looking back at the development of the “Bez granica” association to date, what would you single out as its most important achievements, and what role will the North Adriatic Energy Community play in the future?

A: When we look at the journey from our initial activities to the present day, I would single out the establishment of the Drenova Community Center as one of our most important

DISCOVER IN NUMBERS

Results To Date

More than 20 new energy community projects

Around 3 GWh of renewable energy generated annually

More than €7.7 million invested in renewable energy generation

More than 400 trained market stakeholders

More than 20,000 people reached through project activities

project, the establishment of the Support Center for Citizen Energy Projects, and cooperation with the University of Rijeka.

In the coming period, the “Bez granica” association will once again focus more strongly on the broader context of local community development, while the North Adriatic Energy Community will gradually take over energy-related activities. After the DISCOVER project is completed, the Energy Community will also take over management of the local Support Center for Citizen Energy Projects.

What particularly encourages us is that, starting from small-scale initial activities, we have reached a concrete and functional energy community that can serve as a proven example for other communities across the region. This applies

communities in Croatia, and what obstacles, as well as opportunities, do you see for their further expansion?

A: Citizen energy communities in Croatia are still at an early stage of development. A legal framework is in place, but its implementation in practice is often discouraging. Neither citizens nor local authorities always have sufficient information or technical support to launch such initiatives independently.

Based on our experience, among the biggest challenges are the administrative complexity involved in establishing and operating energy communities, insufficiently clear transposition of European regulations, which leaves room for different interpretations, as well as inadequate support from regulators in resolving outstanding strategic issues more quickly. In some situations, we also encounter obstacles, while additional problems include delays in the development of HEP’s IT platforms and limited funding opportunities for smaller citizen-led projects.

There are also serious systemic problems, including fixed energy-sharing allocation keys, very low feed-in prices for surplus electricity generated by citizens, as well as generally insufficiently developed IT support.

On the other hand, the opportunities are significant. Citizen interest is growing, while solar panels and battery storage systems are becoming increasingly accessible.

Projects such as DISCOVER demonstrate that, with the right support, energy communities can move relatively quickly from the idea stage to concrete and measurable results. We believe that the next few years will be crucial in determining whether this model will expand in Croatia beyond individual pioneering examples such as the North Adriatic Energy Community.

Interview by Milica Vučković



achievements. It provided a strong framework for developing various citizen initiatives in our area. This work subsequently led to several important steps: the establishment of the North Adriatic Energy Community, participation in the LIFE DISCOVER

particularly to the software tools we have developed, which are universal and can be relatively easily applied in other local communities.

Q: How do you assess the current development of citizen energy



SERBIA'S NEW ENVIRONMENTAL PROTECTION STRATEGY: DIRECTIONS FOR ACTION UNTIL 2033

Environmental protection in Serbia needs to be further aligned with the objectives of the Green Agenda, sustainable development, pollution reduction, the preservation of natural resources, and the improvement of citizens' quality of life. Although Serbia had a National Environmental Protection Program for the period from 2010 to 2019, which established certain objectives and provided a basis for improving the field, following its expiration, there was no document in place to enable longer-term, more systematic environmental policy planning.

On 10 November 2020, the countries of the region signed the Sofia Declaration on the Green Agenda, committing themselves to transferring the principles of the European Green Deal into key sectors of their economies. As one of the signatories, Serbia thereby accepted the obligation to steer its development towards a climate-neutral and competitive economy that uses resources more efficiently. As part of implementing these commitments, the Strategy for Environmental Protection of the Republic of Serbia until 2033 – the Green Agenda for Serbia – was adopted this year, defining long-term directions and priorities in environmental protection.

According to its introduction, the Strategy represents the overarching public policy document in this area. Its development incorporated the objectives of the Green Agenda, as well as measures to further align domestic legislation with European Union regulations and standards. The Strategy also provides mechanisms for monitoring its implementation.

Taking into account the integrated objectives, Serbia should focus its efforts through 2033 on several key areas. Climate change and decarbonization are identified as one of them, primarily focusing on reducing greenhouse gas (GHG) emissions,



adapting to changing climate conditions, using energy more efficiently, and transitioning to cleaner, renewable energy sources.

Another area is the circular economy, which includes industrial symbiosis, waste recovery, responsible recycling, sustainable production, innovation, eco-design, green public procurement, and efficient use of resources. When it comes to reducing environmental pollution, the focus is primarily on improving air, water, and soil quality; reducing industrial pollution; managing risks and chemicals; reducing environmental noise; and protecting against ionizing and non-ionizing radiation.

The protection of biodiversity and ecosystems is also classified as a key area, through activities aimed at the protection and sustainable management of natural resources, including forests, protected areas, and wild species. The final area concerns sustainable food systems and rural development, with particular attention to agriculture's impact on the environment, food safety and sustainable food production, organic production, as well as the responsible use of plant protection products and fertilizers.

In addition to specific areas of environmental protection, the Strategy

An important part of the Strategy also concerns digitalization and greater citizen involvement through better information, education, and participation in decision-making on environmental issues

also envisages improving the legal and institutional framework and creating conditions for the development of a low-carbon economy. Particular importance is given to promoting innovation and developing green technologies, which should contribute to green economic growth and the creation of new green jobs. In this regard, investments in renewable energy sources, energy efficiency, environmental protection, and waste recovery are also recognized as opportunities to develop new industries and jobs.

An important part of the Strategy also concerns digitalization and greater citizen involvement through better information, education, and participation in decision-making on environmental issues. At the same time, improving the environmental financing system has been identified as a challenge. Serbia needs to continue developing and strengthening partnerships with other countries,

international organizations, and non-governmental organizations.

The structure of the Strategy follows the five pillars of the Green Agenda, while a sixth pillar covers horizontal issues that are important for achieving the objectives across all the aforementioned areas.

The Strategy was prepared at the proposal of the Ministry of Environmental Protection, in accordance with the Law on the Planning System and the Law on Environmental Protection, taking into account existing planning documents in the field of environmental protection and other sectors, such as digitalization, industry, education, public health and social policy.

In this way, the Strategy establishes a framework for the long-term planning and implementation of environmental protection policy in Serbia, linking environmental, climate, and development objectives and aligning them with European standards.

Prepared by Katarina Vuinac



HOW E-BIKE TOURS HAVE BECOME THE NEW ACTIVE HOLIDAY TREND

As more and more people seek holidays that combine physical activity, nature, and an authentic destination experience, one form of tourism in Serbia is experiencing a real boom – one-day electric bike tours. Behind this idea is Tatjana Anić from Explore Serbia / Explore Balkans, an agency that has been organizing hiking and adventure tours for years and which discovered the potential of e-bike tours several years ago.

– The idea came about quite naturally, as an extension of what we have been doing for years – says Tatjana. Her first encounter with an electric bicycle changed her perception of what an active holiday could be – electric assistance does not take away from the enjoyment of cycling; instead, it allows you to see more in the same amount of time, tackle uphill sections more easily and devote more attention to nature and the experience itself.

One of the biggest myths about cycling tours is that they are reserved for well-trained and experienced riders. Tatjana says the opposite is true – the majority of their tours are designed specifically for recreational cyclists.

– No previous experience with an electric bicycle or top-level fitness is required. It is enough for a person to know how to ride a regular bicycle safely – our interviewee explains. Before setting off, every group receives a short briefing and takes part in a test ride, while the pace is always adapted to all members of the group – which, she says, is precisely the real value of an electric bicycle: it enables people with different levels of fitness to ride together without frustration or falling behind.

Although an electric bicycle may seem simple to operate, Tatjana emphasizes that safety is taken extremely seriously. Every tour begins with adjusting the bicycle, a test ride, and an explanation of the



basic rules of group riding and braking. Participants are provided with helmets, gloves, and technical support throughout the tour, while an experienced guide leads the group, adjusting the pace and planning rest breaks.

More Than a Ride – A Story of the Region You Travel Through

A typical day on a tour is not measured by the number of kilometers covered, but by the experiences along the way. After gathering and a brief introduction to safe riding, the group sets off towards viewpoints, lakes

and monasteries, with frequent breaks to rest and take photographs.

– The goal is not to cover a certain distance as quickly as possible, but to get to know the destination – Tatjana emphasizes. Almost every tour ends with lunch at a rural household, a local winery or another authentic venue – a combination which, she says, makes the tour unforgettable.

The Explore Serbia / Explore Balkans offer includes routes on Fruška Gora, Rajac and Suvobor, Tara, Maljen, and in Deliblato Sands – each with a completely different character.

Fruška Gora, with its forest roads, lakes and monasteries, is ideal for a

first introduction to e-bike tours. Rajac and Suvobor offer vast meadows and more demanding climbs, suitable for more active recreational riders, while Tara delights lovers of mountain landscapes and coniferous forests. Maljen hides quieter, less-known areas, while Deliblato Sands offers perhaps the most unexpected experience – riding through the largest continental sand desert in Europe.

Tourism That Gives Back to the Community

What sets these tours apart from conventional cycling recreation is their strong connection with local communities. Cooperation with rural households, wineries and small family producers is not an incidental detail, but one of the foundations on which the agency builds its programs.

– I believe that sustainable tourism does not only mean spending time in nature, but also ensuring that the people who live in these destinations benefit from tourism – says Tatjana. For guests, this means an opportunity to meet authentic people and experience the local flavors of the areas they travel through, while for local residents, it provides an additional source of income directly from tourism.

For Explore Serbia / Explore Balkans, the e-bike program is still in the early stages of development. New routes in the Sokolske Mountains, Povlen and Bobija are currently being prepared, while the agency is simultaneously developing its hiking and adventure programs.

Tatjana Anić's message is aimed at everyone who thinks that a true escape into nature requires a great deal of time and planning – just a few hours of cycling are enough to discover some of the most beautiful places in Serbia in an active, responsible and sustainable way.

Prepared by Milena Maglovski



HOW SUSTAINABILITY IS CHANGING THE CROATIAN CONSTRUCTION INDUSTRY

Sustainable construction in Croatia is no longer merely a matter of energy efficiency, but of broader planning, construction, and building use. European regulations are introducing stricter standards, while investors are increasingly viewing sustainability through the lens of long-term value, lower costs, and resilience to future changes. Nevertheless, the transition brings challenges, ranging from a lack of data and expertise to high upfront investment costs.

To discuss how sustainable construction is represented in Croatia, what is currently driving the market and regulation, the role of certification and sustainable finance, and where the greatest potential for development lies, we spoke with Marko Markić and Aleksandar Jelovac from the Croatian Green Building Council.

The Croatian Green Building Council focuses on education, certification, market networking, European projects, and cooperation on public policy development

In Croatia, sustainable construction is becoming part of investment practice, but development is uneven. While some investors treat it as an integral part of the planning process, many projects still focus primarily on meeting the regulatory minimum.

European regulation is also driving an important shift in how the sustainability of new buildings is viewed, moving the focus from energy consumption to decarbonization across the entire life cycle. Increasingly, consideration is being given to impacts from the production and transportation of construction materials, the construction and maintenance of buildings, and the end of their useful life.

Renovating existing buildings is more complex, but it also offers an important opportunity to improve the quality of the building stock. A particular feature of Croatia is the overlap between the energy

at the same pace. Among institutional investors and companies developing office, tourism, and other commercial projects, sustainability is becoming increasingly important, partly because of requirements from banks, tenants, and international corporations. When it comes to citizens, however, decisions still tend to depend more on concrete considerations – the level of investment required, the potential for reducing energy bills, the availability of subsidies and the simplicity of the process itself.

– What still needs to be developed more strongly is a culture of looking at the total cost and value of a building throughout its life cycle, rather than focusing exclusively on the initial investment cost, our interviewees say.

Further development of sustainable construction in Croatia faces several challenges.

to become a tool for higher-quality design rather than merely an administrative obligation, it will become increasingly important to develop robust data infrastructure.

The second challenge is expertise – the market needs not only more specialists, but also new practical knowledge of deep renovation, carbon footprint assessment, material circularity, and climate resilience.

The regulatory framework itself is not necessarily the greatest obstacle. A bigger problem is the gap between regulations and their effective implementation. This is particularly important in the public sector, where public procurement should place greater value on quality, environmental impact and life-cycle costs, rather than simply on the initial price. As a major procurer, the public sector can significantly influence the market.

Upfront investment costs certainly remain an important factor,

The goal is not simply to build a home that is affordable at the point of purchase or rental, but to enable housing that is healthy, high-quality, and financially sustainable for its occupants in the long term

renovation of part of the building stock and the reconstruction of buildings damaged in earthquakes. This creates room for an integrated approach – improving energy efficiency, climate resilience and the long-term functionality of buildings at the same time as their structures and envelopes are being upgraded.

Awareness among citizens and investors of the importance of sustainability is also growing, but not

One key challenge is access to high-quality, comparable data. Reliable calculations of the carbon footprint of buildings require data on the environmental impact of construction products. Croatia does not yet have a national database of EPDs, or Environmental Product Declarations, so international databases are often used. These do not fully reflect local production processes and transportation. For new requirements

particularly for citizens. An equally important issue is split incentives – for example, when an owner invests in improving a building, while the user or tenant benefits financially through lower bills.

According to our interviewees, the greatest potential in the coming years lies in renovating the existing building stock, as well as decarbonizing construction materials, advancing the circular economy, improving



construction-waste management, and adapting buildings to climate change. In Croatia and the Mediterranean region, protection against summer overheating and heatwaves will also become increasingly important.

New European Requirements Are Changing the Approach to Sustainable Construction

The Croatian market is responding to new European requirements in the field of sustainable construction at two different speeds. Larger companies, investors, funds and financial institutions, particularly those that are part of international value chains, have been working with ESG requirements, the EU Taxonomy, environmental impact data and various reporting systems for several years. For them, sustainability is no longer merely a matter of communication, but of risk management, access to financing and the long-term value of assets.

For some smaller companies and investors that have not previously been directly exposed to these requirements, the field is still relatively new. The rapid development of the European regulatory framework is further increasing the need for professional support across the market.

It is also important to distinguish between the EU Taxonomy and Level(s). Put simply, the Taxonomy provides a framework for determining which economic activities can be considered environmentally sustainable, while Level(s) is a common European framework for monitoring and reporting on the sustainability of buildings throughout their life cycle. Its value lies in creating a common language for issues such as carbon footprint, resource use, water, user health and comfort, and building resilience.

Interest in sustainable building certification is also growing. As a partner of the DGNB system in Croatia, the Croatian Green Building



The greatest potential in the coming years lies in renovating the existing building stock, as well as decarbonizing construction materials, advancing the circular economy, improving construction-waste management, and adapting buildings to climate change

Council is seeing increasing interest in certification, particularly among office, hotel, retail and other large-scale investment projects.

The underlying motivation has also shifted. Until around a decade ago, certification was often viewed as a reputation and market-communication tool, whereas today it increasingly represents proof of quality, a project-management tool, and a response to the requirements of investors, banks, tenants, and corporate ESG policies.

A certified and demonstrably high-quality building can be a significant competitive advantage, particularly in the professional real estate market. Nevertheless, certification should not be an end in itself, but rather confirmation of a process that leads to a higher-quality and more

sustainable building – not simply a label added at the end of the project.

The World Green Building Council International Network and Global Trends

The Croatian Green Building Council is part of the international World Green Building Council network, through which it monitors and contributes to global trends in sustainable construction. Within this network, three interconnected topics currently stand out which, in the view of our interviewees, will strongly shape the development of sustainable construction in Croatia and the region.

The first is assessing a building's environmental impact throughout its entire life cycle. In this context, LCA (Life Cycle Assessment) is playing

an increasingly important role – an analysis that makes it possible to systematically assess a building's environmental impact across the different stages of its life cycle. The next step is not merely to introduce an obligation to carry out such calculations, but also to gradually define ambitious thresholds that would steer the market toward genuine reductions in emissions and resource consumption.

The second major topic is sustainable finance. The transition to sustainable buildings requires significant investment, particularly in the renovation of the existing building stock. It is therefore essential to develop new financial instruments that reduce upfront barriers and direct capital towards low-carbon buildings.

sprawl and the increasing distance between residents and workplaces and essential services.

It is equally important that affordable does not become synonymous with lower quality. The goal is not simply to build a home that is affordable at the point of purchase or rental, but to enable housing that is healthy, high-quality, and financially sustainable for its occupants in the long term.

Croatian Green Building Council

The Croatian Green Building Council focuses on education, certification, market networking, European projects, and cooperation on public policy development.

applied in practice. As the DGNB System and Academy Partner for Croatia, it focuses on professional development and, through conferences, professional events, and membership, brings together different market stakeholders. Its Central Conference on Sustainable Construction is being held for the ninth time this year and serves as the sector's main meeting place.

It achieves particularly tangible results through European projects, such as crOss renoHome, within which the Home Energy Renovation platform was developed. The platform provides citizens with information in one place on renovating single-family and multi-apartment buildings, financing, and professionals, making it easier to navigate the complex renovation process. Other important projects include INDICATE, focused on monitoring the carbon footprint of buildings and developing higher-quality data, and TOP CLever, through which the Council works with partners from the European Green Building Councils network to strengthen professional capacities for decarbonization and sustainable construction.

The Council also considers developing a national database on the environmental impact of construction products particularly important, as it would enable higher-quality, more reliable data for sustainable construction projects.

The Council also maintains continuous cooperation with institutions, professional organizations, academia and the market. It sees its role as connecting regulation, knowledge and market practice – so that, as they conclude, professionals are able to implement changes, investors understand their long-term value, citizens have access to high-quality information, and policymakers have the experience and data necessary to develop effective policies.

Prepared by Katarina Vuinac



The financial sector is becoming a key driver of change, as lending decisions increasingly depend on projects' demonstrable environmental characteristics.

The third topic is affordable housing. The goal is not simply to increase the number of available square meters, but to encourage innovation in construction technologies, materials, and urban planning to reduce costs while also avoiding urban

Education is one of its most important activities, as regulatory changes cannot have their full effect without professionals who can implement them in practice. The Council therefore organizes programs for architects, engineers, investors and other market stakeholders – from DGNB Consultant Training to training on LCA analyses, EPDs and the EU Taxonomy, with the aim of ensuring that theory is immediately



LANDFILL FIRES IN SERBIA: WHAT IS THE ACTUAL RISK?

Landfill fires in Serbia have long ceased to be incidents that can be seen as solely a local municipal problem. Their consequences can extend far beyond the boundaries of the site itself – from air pollution and exposure of the population to harmful substances to long-term consequences for the environment and human health.

These consequences were the focus of the study, *The Impact of Landfill Fires at Identified “Hotspots” on Air Pollution and Human Health*, conducted as part of the continued cooperation between the United Nations Environment Program (UNEP) and the Association of Environmental Engineers.

As Igor Jezdimirović, Chairman of the Board of this association, explains, the cooperation began in 2022, after landfill fires, particularly the major fire at Vinča in 2021, once again drew public attention to a problem that has been present in Serbia for years. The first result of this cooperation was the publication *Lost Air: The Impact of Landfill Fires on Air Pollution and Human Health in Serbia*.

However, as Jezdimirović points out, the fact that the problem has existed for years does not mean that it has been analyzed systematically enough.

– Although landfill fires have been occurring in Serbia for years, the problem only comes into the

public spotlight when the fire could be felt in Belgrade, he notes, pointing out that the activities that followed were aimed at creating a basis for better understanding and addressing the problem.

Two Tools for a Broader Picture of Risk

The new study used two different approaches. AirQ+, a tool developed by the World Health Organization, was used to assess the health effects of exposure to polluted air, while PRA.MS was used to assess the risks associated with the characteristics of the sites themselves.

According to Jezdimirović, only by combining the two approaches can a

more complete picture be obtained – not only of the extent to which the population is exposed to pollution, but also of how risky the site itself is and where preventive measures should be directed.

This, however, reveals one of the study's key challenges: the tools exist, but the data required for their application are often not of sufficient quality.

– The biggest problem today is not a lack of tools and technological solutions, but a lack of data or their reliability, Jezdimirović emphasizes.

In other words, advanced risk assessment models cannot compensate for a lack of basic field information. The more accurate the data, the more reliable the assessment itself and, consequently, the decision based on it.

That is why our interviewee sees the available tools primarily as instruments for decision-making and for introducing preventive measures.

– It is devastating that in 2026, despite the availability of all these tools, decisions and prioritization of environmental problem-solving are still based on the subjective assessment of an individual decision-maker rather than on measurements and concrete data, he warns.

PM2.5 Levels Above Recommended Values

One of the study's findings was expected, but no less important. None of the ten analyzed areas met the World Health Organization's recommended values for PM2.5 particles.

According to Jezdimirović, the result is not surprising, given the broader picture of air quality in Serbia. Nevertheless, the real question is no longer what the data show, but what will be done based on them.

The second part of the study was conducted using the PRA.MS tool covered 14 locations. As many as 11 of them are non-sanitary landfills.

Jezdimirović explains that ranking locations by risk is not merely an academic exercise. Its purpose is to show where the problems are greatest and where action should be taken first.

The problem, however, is not new. Non-sanitary landfills were recognized as an environmental protection issue as early as 2003, in strategic documents. More than two decades later, Serbia still has more than 100 non-sanitary landfills, along with an estimated 2,500 to 3,500 illegal dumpsites.

The study locations were not selected randomly. They represent the centers of areas where the highest intensity of landfill fires has been recorded in recent years, so the authors selected them specifically for analysis.

The Problem Begins Where There Are No Measurements

If there is one message that runs throughout the entire study, it is that the quality of any assessment depends on the quality of the data on which it is based. And data are precisely one of the weakest points in the system.

– Unfortunately, we currently do not have clear measurements of parameters at landfills. Regulations clearly require measuring the quantities and types of waste being disposed of, but unfortunately this is not implemented in practice. In addition, Jezdimirović says it is necessary to establish a system for measuring pollutant emissions generated at landfills, as well as during fires.

According to him, Serbia once had three mobile ecotoxicological units capable of carrying out on-site measurements during accidents. Today, only one is operational, and it operates commercially.

This creates a kind of vicious circle: without measurements, there is not enough reliable data; without data, it is more difficult to make an

accurate risk assessment; and without a risk assessment, it is more difficult to justify priorities and the measures that should be taken.

What Happens After the Study?

The results of the study will be submitted to the relevant institutions and local governments. However, submitting the results in itself does not guarantee that the recommendations will be implemented.

According to Jezdimirović, the results are not binding, and there is no automatic mechanism that would compel institutions to act on them.

As an illustration of the problem, he notes that around one-third of local governments do not submit reports they are legally required to submit. He considers it particularly problematic that, according to him, the Environmental Protection Agency does not respond to local governments in the same way it does to businesses when it comes to similar failures to comply.

As a result, the issue of landfill fires ultimately returns to a much broader problem – the ability of institutions to turn data into concrete measures.

The study can show where the risks are greatest, what the potential health effects are, and where action is needed. The tools can help ensure that decisions are based on measurable criteria rather than on case-by-case assessments. But without an institutional response, even the highest-quality analysis will not by itself change the situation on the ground.

For Jezdimirović, therefore, responsibility does not lie solely with institutions. Citizens also play an important role.

– Without pressure from citizens and their willingness to demand concrete action from decision-makers, there will be no changes in the protection of human health and the environment, he concludes.

Prepared by Milena Maglovski



A NEW LIFE FOR THE SPACE BENEATH THE ASPHALT

Imagine an average city in our part of the world: an apartment building home to several dozen families, a parking area behind it that no longer meets today's needs, and cars that every afternoon, searching for a space, climb onto curbs, block passageways, or end up on the grass. The solution often seems almost self-evident – reduce the green area, remove part of the lawn, cut down some shrubs and create a few more parking spaces.

And so, little by little, every new parking space quickly becomes an argument for marking out the next one. Pavements become narrower, intersections wider, and the city gradually and almost imperceptibly adapts to the car.

French philosopher and sociologist Henri Lefebvre, speaking about the “right to the city” as early as the late 1960s, insisted that a city is not merely a space through which we pass and in which we live, but

something its residents should actively shape. His thinking could perhaps also be expressed as the idea that the right to the city is not merely the right to be present in it, but also the right to decide what it will be like.

That right continues when you step outside your own apartment. A citizen does not live only within four walls and on the plot of land that belongs to them. A city also consists of the pavement they walk along every day, the park where they sit, the

market, the riverbank, an avenue of trees, a schoolyard and the open spaces between buildings. Such spaces are often lost through small interventions that, individually, may not seem dramatic, but that change the city and extinguish the potential of a particular space.

It is well known that avenues of trees and forests are the lungs of cities, but the soil itself is also of crucial importance – its porosity and ability to absorb and retain water. Natural soil is not simply an empty space waiting for future construction. Its pores allow water to penetrate the ground, remain there, and gradually drain away. During periods of intense rainfall, which we have increasingly witnessed, it functions like a sponge, slowing the moment when large quantities of water reach the drainage system and cause flash flooding. Concrete does not have this

for places where concrete is no longer necessary. Instead of turning a lawn into a parking lot, it turns a parking lot into a garden. A paved schoolyard into a space with trees. A neglected asphalt lot into soil through which rain can once again penetrate. Such an organization exists. It is called Depave and can serve as an example.

It is a non-profit organization based in Portland, Oregon, that has developed a kind of depaving movement, but what it does goes far beyond simply breaking up concrete. Cities have surfaces that were once paved because that was what was needed at the time, but that does not mean they have to remain that way forever.

And, when it comes to soil porosity, their projects demonstrate that restoring just a few hundred square meters of land can make a significant difference. In an average Depave

remove the asphalt around their homes and create gardens. This led to a simple question: if it is possible to restore land in one's own yard, why should the same not be possible in larger urban areas?

From 2008 to the end of 2023, Depave worked at 80 sites, removing approximately 3.4 hectares of asphalt. The organization estimates that, because of these interventions, around 92 million liters of rainwater per year are diverted from impermeable surfaces into the soil at restored sites.

In addition, Depave cites a NASA analysis of six of its projects, in which the removal of impermeable surfaces and greening resulted in a reduction in reflected heat of up to 4.3 degrees Celsius. The analysis also assumes that the cooling effect will continue to increase as the vegetation matures.

Of course, cities cannot function without roads, access routes, and parking, which are also integral parts of the urban environment. Nor is the idea to simply remove cars from urban life. The problem begins when asphalt becomes the default answer to almost every spatial need.

The organization demonstrates how the direction of thinking can be reversed. Instead of asking, "Where can we create more parking?", we could ask, "Where do we no longer need this asphalt?"

In an average city in our part of the world, the answer might be part of a large schoolyard without a single tree. Perhaps a neglected lot between buildings. Perhaps several parking spaces in an area where a group of trees could, twenty years from now, provide shade for an entire street. Perhaps a city square covered with paving slabs, where in summer there is hardly anywhere a person would want to linger. Not every one of these spaces needs to become a park, but perhaps not every one of them needs to remain concrete either.

Prepared by Milica Vučković



ability, because there is nowhere for the water to penetrate. It quickly runs towards drains, streets, and the sewage system. The greater the area of a city covered with impermeable materials, the greater the amount of water that becomes concentrated in the same places within a shorter period of time. At the same time, these surfaces accumulate heat during the summer, further warming their surroundings.

Now imagine an organization that does precisely the opposite – looking

intervention, around 335 square meters of impermeable surface are removed. These may be oversized parking lots, driveways, areas around public institutions, or concrete lots that have little or no remaining function. Depave works with local communities to identify such places, remove the asphalt, and return the land to productive use. Interestingly, the entire idea grew out of a very small and personal experience. The organization's founders wanted to



A FAÇADE THAT FLIES BY CRANE – THE GERMAN RECIPE FOR BUILDING RENOVATION

The construction sector is one of the largest consumers of energy and sources of greenhouse gas emissions, which is why the energy renovation of existing buildings plays a key role in achieving climate targets. However, conventional renovation often takes months, requires intensive construction work, and places a significant burden on residents. That is why serial renovation models are increasingly being developed across Europe, based on

industrially manufactured prefabricated elements that enable faster, higher-quality and more cost-effective modernization of buildings.

One of the more advanced examples of this approach comes from Berlin, where an energy renovation project for residential buildings is currently underway in the Lichterfelde district, using so-called floating façades.

Two buildings dating back to 1954 had typical characteristics of buildings from that period, such as high

energy losses, deteriorating building structures, and rising maintenance costs. Through serial renovation, the project not only improves the buildings' energy performance but also enhances the long-term quality of life and the buildings' resilience to future challenges. The project began with the construction of a new, highly insulated building envelope. This included prefabricated façade elements with modern windows, while the installation of a photovoltaic solar power system is also

planned. In addition, the existing balconies will be replaced with spacious prefabricated aluminum balconies, while hydraulic balancing of the heating system and insulation of the basement ceilings will be carried out inside the buildings to further optimize their energy performance.

The energy concept is complemented by decentralized ventilation systems and hydraulic balancing of the radiators. The existing district heating supply and central domestic hot water system will remain an efficient foundation of the system.

Upon completion of the works, the buildings are expected to achieve a significant improvement in energy

and owners alike, as well as the environment.

The project's energy performance results are particularly significant. Following the renovation, the buildings' energy rating will be upgraded from class F to class A, and they will meet the KfW 55 energy efficiency standard (requiring energy consumption of no more than 55 percent). Through the application of new technologies and energy optimization measures, CO₂ emissions are expected to be reduced by 21.8 tons per year, while total emissions will fall from 23.1 tons to 1.3 tons of CO₂ equivalent per year, thanks to the combination of energy renovation

renovation in Germany). The event focused on expert discussions on accelerating the heat transition and a practical demonstration of serial renovation technology. Representatives of institutions and the construction sector – Petra Kahlfeldt, Director of Construction at the Berlin Senate, Hinrich Holm, Chairman of the Management Board of the Investment Bank of Berlin (IBB), Dorit Brauns, member of the Board of Trustees of the Alexandra-Stiftung foundation and Deputy Managing Director of Hilfswerk-Siedlung GmbH, and Emanuel Heisenberg, founder and CEO of Ecoworks – highlighted the importance of innovative solutions for modernizing the existing housing stock.

Dorit Brauns emphasized that climate targets cannot be achieved through new construction alone but primarily through the renovation of existing buildings where people already live, while preserving housing quality and affordability. Petra Kahlfeldt stressed that the project demonstrates the potential of serial renovation, which enables faster, more cost-effective work with minimal disruption to residents and helps achieve Berlin's climate targets.

Particular attention was drawn to the demonstration of the so-called floating façades – prefabricated façade modules installed on existing buildings using a crane. The modules, approximately 34 centimeters thick and equipped with integrated insulation, windows, and a ventilation system, are manufactured in a factory, significantly reducing the time required for on-site construction.

Emanuel Heisenberg of Ecoworks emphasized that industrial prefabrication and robotics are key to increasing productivity in the construction sector, accelerating energy renovation and creating a more climate-friendly housing stock.

Prepared by Jasna Dragojević



efficiency, with final energy consumption reduced by more than 70 percent. At the same time, CO₂ emissions will be significantly reduced, giving the buildings a more modern, sustainable and energy-efficient character. Thanks to the application of the serial renovation method, the works are carried out faster and more cost-effectively, with minimal disruption to the residents' everyday lives. The result is a higher-quality, more comfortable living environment that benefits building users

and electricity generation from the photovoltaic system.

At the same time, final energy demand will be reduced from 158 kWh/m² per year to 46 kWh/m² per year, representing a 71 percent reduction.

Project Presentation

This innovative serial renovation method was presented in late spring by Germany's oldest housing foundation, Alexandra-Stiftung, the company Hilfswerk-Siedlung GmbH, and Ecoworks (a pioneer of serial



TRADITIONAL KNOWLEDGE BUILDS A NEW PATH TO NATURAL CONSTRUCTION

Building with natural materials is bringing renewed attention to knowledge and techniques used for centuries, while also adapting them to contemporary needs. Earth, wood, straw, and other locally available materials can provide the basis for high-quality, comfortable spaces while placing less pressure on the environment.

Architect Dragana Kojičić confirms that Serbia and the region have a long tradition, as well as

significant potential, for developing earthen construction, having spent years researching and promoting the contemporary application of earth-building techniques. According to her, previous generations' experience shows that different types of earth can be reliable building materials, while traditional techniques provide a sound basis for further improvement.

– The whole of Vojvodina was built with earth, and earthen houses

can still be found in cities. In the rest of Serbia, as well as throughout the region outside the Pannonian Plain, earth was mainly used as infill in houses with timber structures. Unfortunately, the loss of continuity in earth construction over the past 70-plus years has meant that much of this knowledge has been forgotten and many houses have been demolished. Nevertheless, it seems that in recent years, particularly since the pandemic, people have increasingly



come to understand the value of healthy homes made from natural materials and are making an effort to preserve them as much as possible – says Kojičić.

She points out that returning to locally available materials is gaining additional importance amid climate,

materials based on a particular location and its available resources. As an example, she cites a proposal she once received to build a straw house on Goli Otok, even though stone is readily available on the island itself. Such situations, she explains, show that the essence lies not in



energy and economic challenges. She believes that using what is available in the immediate surroundings can help address these challenges, as it reduces the need to transport materials over long distances. Besides earth, other locally available materials can also be used, such as straw, hemp and stone.

Kojičić also emphasizes that earthen architecture does not mean using earth at all costs, but rather making a considered choice of

advocating for a single material, but in using what is available to us.

For the wider application of natural materials, obstacles remain, but there are also areas where they can reach their full potential.

– Although large-scale earthen construction in cities is limited by the availability of materials, transportation and the organization of construction sites, this building method can be an interesting option for individual homes and holiday houses, as well as for certain public buildings. Spaces intended for children, such as kindergartens and schools, may offer particular potential, where the choice of natural materials can contribute to a higher-quality and more pleasant environment – she explains.

The wider use of natural and locally sourced materials in construction still faces a range of obstacles, from regulations and a lack of incentives to the availability of materials, equipment and skilled labor. However, she says, the situation is gradually changing, particularly with the interest shown by younger generations.

– Regulation is certainly very important, as are state incentives to preserve existing earthen houses and build new ones. There is also, of course, the market for materials, tools, and machinery that could speed up construction. On the other hand, although machinery significantly accelerates construction, it also considerably increases costs. There is certainly also a need for skilled craftsmen, but I would say that this is changing for the better – it seems to me that more and more young people are forming groups and working together on projects of this kind. Access to information and education is also, I would say, extremely important – she says.

The numerous participants in courses at the Center for Earthen Architecture in Mošorin, who are learning how to renovate existing earthen buildings and adapt them to their needs, show that this type of construction has a future. During the summer, they also launched a platform that brings all relevant information together in one place.

– The LEP platform, a project supported by the Sidro Foundation, was conceived as a self-sustaining hub bringing together all information related to renovation and construction using natural and locally sourced materials: craftsmen, architects and engineers, construction companies, materials, tools, as well as DIY videos, events, literature and more. We are starting in Vojvodina, aiming to cover Serbia, and we hope to continue and expand our reach with colleagues from the region. As part of the project, we have already held one certified (ECVET) training program for craftsmen, and we are currently preparing an Open House Weekend. During the event, we want to open around ten earthen buildings to the public so that people can see them for themselves and ask any questions they may have – Kojičić concludes.

Prepared by Jasna Dragojević



CARBON-FREE LIME: AN INNOVATION TRANSFORMING THE CONSTRUCTION INDUSTRY

The construction industry is responsible for around one-quarter of global greenhouse gas emissions and is among the largest sources of CO₂ emissions. At the same time, the construction sector plays a key role in the global energy transition, as the way buildings are designed, constructed, and used significantly affects energy consumption and emissions throughout their life cycle. One of the greatest challenges is the production of construction materials, particularly cement and lime, due to the high emissions generated during production processes, which are difficult to eliminate completely through increased energy efficiency or the use of renewable energy sources alone.

The technology offers promising prospects not only for lime production, but also for areas such as waste management and the cement industry

Lime production, in particular, presents a significant challenge. In order for lime to be used as a construction material, it must first undergo a calcination process, during which the majority of CO₂ emissions generated throughout the entire production process are released. Therefore, achieving climate-neutral production requires more than simply replacing the calcination fuel or using an electric kiln, because CO₂ is also released from the material itself. Exhaust gases from cement plants contain up to 33 percent CO₂, while in lime plants this share often exceeds 40 percent.

Scientists at the German Fraunhofer IKTS institute in Hermsdorf are researching a solution to reduce these emissions. With 74 institutes and research institutions, it is a

pyrolysis into hydrogen and valuable elemental carbon (carbon black, a raw material used in the tire, paint, and other industries).

For this process, the team combines a specially developed membrane reactor with a sealed electric furnace, in which CO₂ is released from the lime and subsequently captured. The hydrogen required for methanation is introduced into the reactor under controlled pressure and metered flow, where a chemical-catalytic reaction takes place to produce methane. The resulting product stream is then dried and subjected to pyrolysis – that is, the methane is separated into hydrogen and carbon.

The elemental carbon can subsequently be used, for example, in the chemical industry or as a fertilizer in agriculture, while the released

Utilization (CCU), meaning that we capture CO₂ from industrial gases or from the air and use it again as a raw material – explains Jaeger.

He adds that the membrane reactor they have developed is based on Fraunhofer IKTS's core expertise in materials development, plant engineering and systems integration.

– The technology offers promising prospects not only for lime production, but also for areas such as waste management and the cement industry – he says.

The reactor's operating principle has already been successfully tested at project partner HySON – Institut für Angewandte Wasserstofforschung Sonnenberg gGmbH, while Johann Bergmann GmbH & Co. has developed a new electric furnace for the facility. In the next step, the researchers aim to implement the technology at an industrial scale together with their partners.

The “Green Lime” project was funded by the Federal Ministry of Research, Technology and Space (BMF-TR).

How Green Lime Works

The “Green Lime” project is developing a system in which CO₂ from lime production is not released into the atmosphere, but instead used as a raw material for new products.

Electric furnace – enables lime production while reducing emissions from fuel combustion.

Methanation reactors – use green hydrogen to convert CO₂ into methane.

Pyrolysis reactor – separates methane into hydrogen and carbon black, a valuable industrial raw material.

The hydrogen produced is returned to the process, thereby closing the carbon cycle and applying the principle of Carbon Capture and Utilization (CCU) – capturing and reusing CO₂.

Prepared by Jasna Dragojević



leading organization for applied research.

Specifically, they are developing a technology in which the CO₂ generated during lime calcination is no longer released into the atmosphere but is instead used directly as a raw material. Using green hydrogen, the researchers convert CO₂ into methane, which is then broken down through

hydrogen is returned to the plant's process cycle.

Benjamin Jaeger, a chemist and project manager, emphasizes that this technology not only significantly reduces emissions from lime plants, but also enables the production of new raw materials.

– We operate according to the principle of Carbon Capture and



SERBIA AMONG 177 COUNTRIES WORLDWIDE: THE ENVIRONMENTAL PICTURE THROUGH EPI 2026

A country's success in protecting the environment is difficult to reduce to a single figure. Some countries achieve better results in particular areas, while others make more balanced progress across different fields, making an overall assessment far from straightforward. Numerous statistics, reports, and indices attempt to monitor and compare this situation, including the Environmental Performance Index (EPI). This international index does not provide a complete picture of everything happening on the ground. Still, it offers a comparable assessment of how closely countries have moved towards certain environmental goals and which areas show stronger or weaker performance. The 2026 edition covers 177 countries and 47 indicators across 12 categories. The research team assembled around the Yale Center for

Serbia receives the maximum score of 100 points for the indicator tracking how changes in land use and forestry affect the carbon balance

Environmental Law & Policy, with researchers from Columbia University and other institutions, bases its results on data from international organizations and research institutions, scientific assessments, satellite data, and other verifiable sources. Since the latest available data are used for each indicator, the data presented in the EPI tables do not necessarily come from the same year.

The overall EPI score consists of three major components, which are not weighted equally. Ecosystem Vitality accounts for 45 percent of the overall score, Climate Change for 30 percent, and Environmental Health for 25 percent.

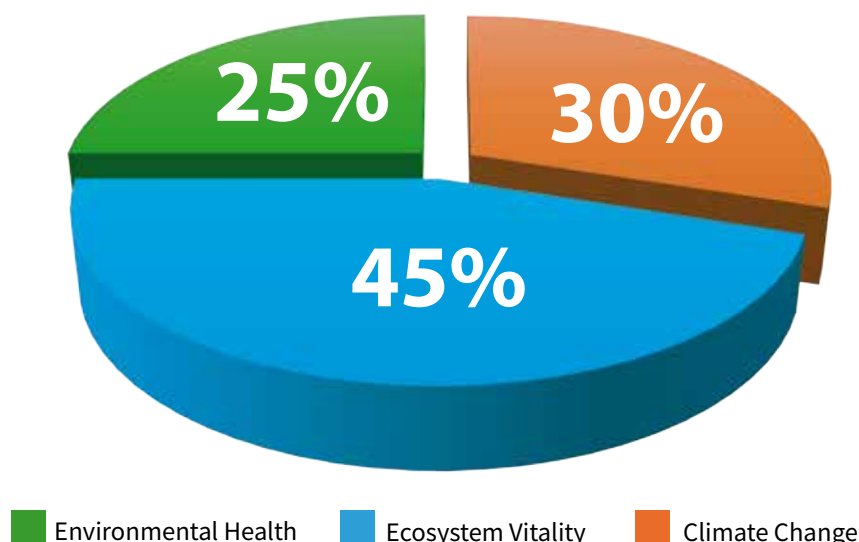
With a total score of 44.94 points, Serbia ranked 69th out of 177 countries worldwide and 17th out of 19 countries in its regional group, which the EPI defines as Eastern Europe. The regional average for this group is 54.93 points. For comparison, Estonia ranked first in the world with 74.79 points; Slovenia ranked 14th; Croatia 36th; Montenegro 55th; and North Macedonia 56th. Looking at Europe as a whole, the only two countries located entirely within Europe that ranked below Serbia are Bosnia and Herzegovina (76th) and Moldova (109th).

Among the 20 highest-ranked countries, 19 are European, with Japan, ranked 16th, being the only exception.

Overview of the Three Main Categories

Looking at the first of the three main categories – Environmental Health – Serbia scores 43.92 points, ranking 87th in the world and 17th among the 19 countries in the Eastern Europe regional group. Specifically, this category covers four broader areas directly linked to public health: air quality; drinking water and sanitation; exposure to heavy metals (assessed through lead exposure); and solid waste management. The

Share of the Three Main Categories in the Country's Final Score



The overall EPI score consists of three major components, which are not weighted equally. Ecosystem Vitality accounts for 45 percent of the overall score, Climate Change for 30 percent, and Environmental Health for 25 percent



weakest-performing subcategory for Serbia is air quality. With a score of 28.56 points, Serbia ranks 117th in the world and second-to-last in its regional group. Serbia performs particularly poorly on PM2.5 particles and sulfur dioxide, while its results for nitrogen dioxide and ozone are significantly better. Nevertheless, Serbia's EPI air quality score is 8.31 points higher than it was approximately ten

years ago, calculated using the same methodology.

A much more favorable result is recorded for drinking water and sanitation – 74.84 points and 37th place in the world, nearly at the regional average. This score is based on the estimated health burden associated with unsafe drinking water and inadequate sanitation. The result for lead exposure is weaker – with



45.67 points, Serbia ranks 103rd in the world.

However, solid waste management stands out, with Serbia receiving a very high score. This does not mean that the country recycles all its waste or that it has resolved its landfill problems. The high score under this methodology primarily indicates the share of waste managed and disposed of through recognized forms of waste management, rather than reflecting the overall quality of the waste management system.

The second of the three main categories, Ecosystem Vitality, carries the greatest weight in the final score. Serbia scores 42.34 points, ranking 97th in the world and 16th in the region, and its score is 4.08 points higher than it was approximately ten years ago. Biodiversity and habitat conservation stand out among the weaker-performing areas.

Some of Serbia's lowest individual scores are found here. The connectivity of protected areas is rated at just 9.43 points, while Serbia scores 12.25 points on the biodiversity habitat index, ranking 169th in the world. The assessment considers not only how much land is formally protected,

but also how well natural habitats are preserved, degraded, and connected, which is important for species movement. On the other hand, Serbia performs better in the Red List category, which tracks the overall extinction risk of assessed species. With 72.97 points, Serbia's score is above the regional average.

The picture is somewhat different when it comes to forests, one of the subcategories. Serbia scores 20.95 points, and its score has deteriorated compared with ten years ago, although the country still ranks fifth in its regional group. Again, the indicator does not measure the country's total forest area but primarily tracks the five-year average loss of tree cover, including losses in areas important for biodiversity.

Serbia performs better in the agriculture subcategory. With 60.73 points, it ranks 50th in the world and seventh in the region, above the regional average. This category assesses the environmental performance of agricultural production through nitrogen and phosphorus management, the ratio between actual and attainable yields, and the risk of pesticide pollution. Serbia performs

particularly well in sustainable nitrogen management, ranking ninth in the world and first in the region, while it ranks only 136th globally and 18th regionally for pesticide pollution risk. Nevertheless, Serbia's overall agriculture score has improved by 8.43 points.

The third major category contributing to the final score, Climate Change Mitigation, accounts for 30 percent of the overall EPI result. Serbia scores 49.69 points, ranking 38th in the world and 13th in its regional group. Its global ranking is better than in the previous two major categories. Still, the country's trajectory has deteriorated by 17.37 points compared with the result for the period approximately ten years ago. For Serbia, the deterioration is particularly evident in CO₂, nitrous oxide, and fluorinated gases, while trends are more favorable for methane and black carbon.

On the other hand, Serbia receives the maximum score of 100 points for the indicator tracking how changes in land use and forestry affect the carbon balance. According to this methodology, this score means that Serbia was a net carbon sink during the period assessed. In other words, the land-use and forestry sector as a whole sequestered more carbon than it released.

Serbia's environmental picture is neither uniformly poor nor entirely favorable. The country lags most in air quality, biodiversity and habitat conservation, while stronger results are seen in drinking water and sanitation, as well as in certain agricultural indicators. However, the overall deterioration in climate-related indicators over approximately the past decade is concerning. Unlike the first two major categories, climate performance has worsened, suggesting that progress in some areas has so far not been sufficient to improve the broader picture reflected in these data.

Prepared by Milica Vučković

Smart infrastructure

is sustainable infrastructure

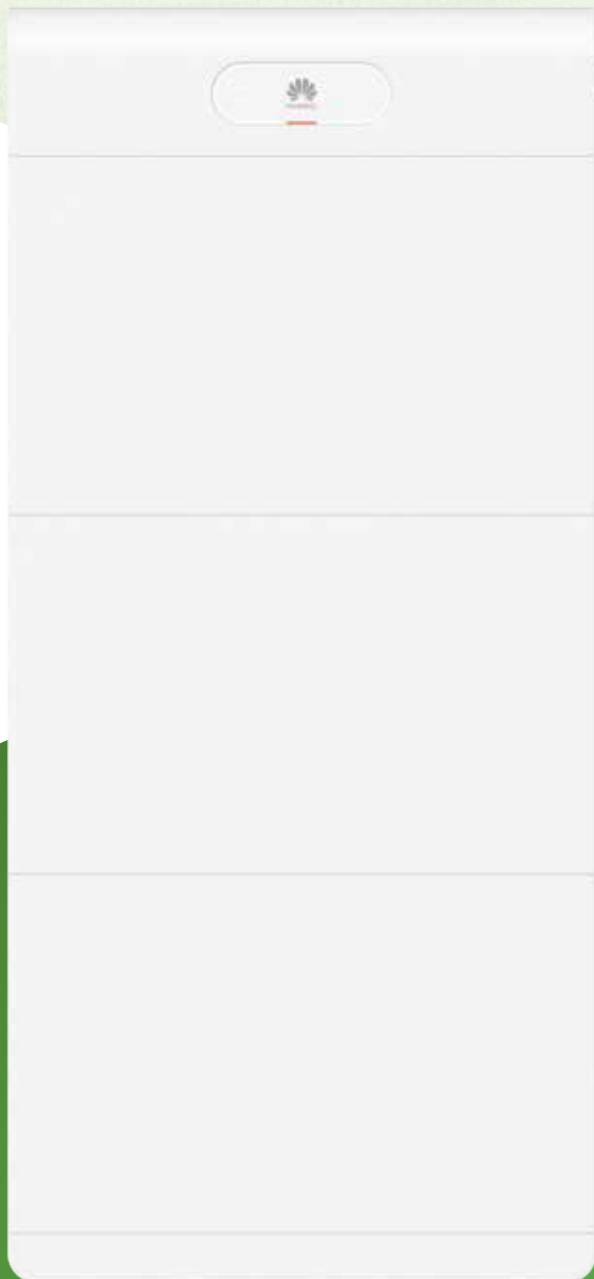


SIEMENS



Take Control of Your Energy

*Huawei FusionSolar
LUNA S1 Series.*



- Smart energy management
- 5 & 7 kWh capacity
- Easy system integration
- Greater energy independence