NR. 31 ■ 2023

ENERGY PORTAL emagazine

ISSN 2560-6034

Marija Levanti
The Greek Ambassador to Serbia
RENEWABLE SOURCES KEY TO ENERGY SECURITY

Miroslav Alempić
Assistant Minister for Road Transport, Roads, and Traffic Safety
HOW TO DEVELOP ELECTROMOBILITY IN SERBIA FASTER?

BMW electromobility
THE FUTURE GUIDED BY INNOVATIONS

NIS FUTURE AT WORK

Our sustainable community

WORD OF THE EDITOR

ENERGY PORTAL MAGAZINE
Bimonthly publication
energetskiportal.com

Address:
Bulevar Oslobođenja 103/3
11010 Belgrade

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Publisher:
CEEFOR Ltd, Belgrade

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CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

620.9

ENERGY portal magazine / editor-in-chief Nevena Djukić. - Štampano izd. - 2017, no. 9 (nov.)- . - Belgrade : CEEFOR, 2017- (Zemun : Birograf). - 30 cm

Dvomesečno. - Drugo izdanje na drugom medijumu: Energy portal magazine (Online) = ISSN 2560-6034

. - Ima izdanje na drugom jeziku: Magazin Energetskog portala (Štampano izd.) = ISSN 2560-5232

ISSN 2560-6026 = Energy portal magazine (Štampano izd.)

COBISS.SR-ID 259518988

Dear readers,

Like most, we rested a little during the summer, but we were also hardworking. We tried our best to prepare an issue that brings you a handful of articles about electromobility and other interesting topics you are used to.

As the expansion of electric vehicles is expected by the end of 2030, many of us will buy an electric car in the next few years. That's why we talked with Miroslav Alempić, Assistant Minister for Road Transport, Roads and Traffic Safety, about the development of electromobility, the network of chargers, and the novelties introduced by the Law on Planning and Construction.

Dalibor Ignjatović, Director of Innovation at NAAEV, said what other measures the authorities should take so that everyone in Serbia could travel faster with electric vehicles. In April 2022, this Association submitted to the Government of Serbia an initiative for infrastructural regulation of the status of electric chargers for e-vehicles.

We talked about Greece's investments in environmental protection, how this favorite tourist destination of our fellow citizens faces the challenges of the energy crisis and other topics with Maria Levanti, the Greek Ambassador to Serbia. The former Serbian capital, Raška, is working on the purification of wastewater and is building facilities for the purification of such water, for the construction of which the Municipality and the Government of Serbia allocated more than 5.3 million euros.

Mayor Nemanja Popović spoke about energy policy measures, subsidies for citizens for solar power plants in this city and other topics. We also bring you stories about the development of electromobility from Montenegro, Croatia and Slovenia. It is interesting to read about the way of thinking of Jovica Milanović, Professor of Electrical Engineering and Dean of the Faculty of Electrical Engineering and Electronics at the University of Manchester in Great Britain, on the proper management of energy consumption, as well as the opinion of Professor Vladimir Momčilović, PhD from the Faculty of Transport and Traffic Engineering in Belgrade, on the construction of public charging stations on highways and the development of electromobility in Serbia.

As usual, you can read interesting stories in the People and Challenges section. Get ready for an exciting adventure that we bring you and turn the next page of this issue.

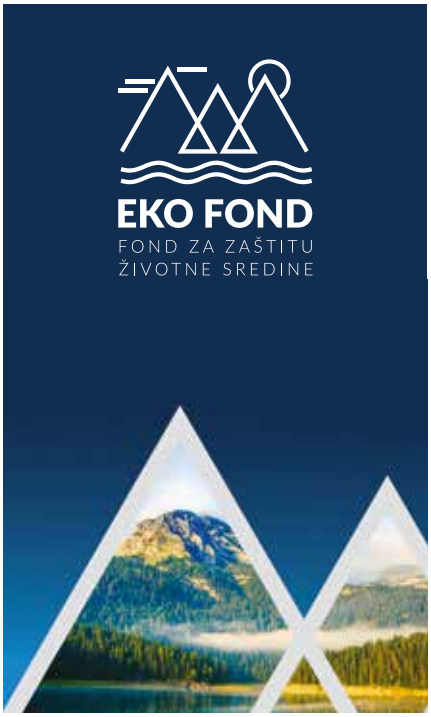
Nevena Đukić

Nevena Đukić,
editor-in-chief

Photograph: courtesy of Nevena Đukić

IN THIS ISSUE...

Photographs: (left) Unsplash/Oxana Melis; (top) Thessaly, Plastira lake ©GNTO/Y. Skoulas (bottom) Unsplash/Kumpan electric



Photograph: Unsplash/Riccardo Annandale

RENEWABLE SOURCES KEY TO ENERGY SECURITY

Warm sea, pleasant climate and authentic architecture – this is perhaps the shortest description of one of the most popular tourist destinations on the European continent and the largest country on the Balkan Peninsula. However, apart from being a favorite summer destination, Greece is attracting more and more attention due to the development of a green economy in the demanding conditions that nature has imposed on the country. The Greek government plans to significantly increase its green energy capacities so that renewable energy sources (RES) will make up at least 60 per cent of the energy mix by 2030.

The Greek Ambassador to Serbia, H.E. Maria Levanti, says that in 2021, Greece drafted and published the National Energy and Climate Plan (ESEK) for the period up to 2030, which sets goals and defines measures related to the national environmental protection policy. In this context, a number of measures have already been implemented in terms of energy modernization of buildings, replacement of fuel for heating units and replacement of heating and cooling devices. At the same time, in 2020, policies and measures for delignitization and environmental restoration were drafted and implemented in areas with lignite production, which have been temporarily postponed due to the recent energy crisis.

Greece is also working on expanding its renewable energy facilities and applying measures that contribute to environmental protection to boost both the Greek and regional economies.

Q. Renewable energy sources (RES) have fully corresponded to the increase in global demand for electricity in the first half of 2022. How did you manage to get rid of fossil fuels and switch to clean energy to ensure that the country has enough energy?

A. The Investment Law stipulates incentives for the use of renewable

Although, according to the relevant data, resource productivity in Greece is slightly lower than the EU average, it has been steadily increasing over the last decade

Photograph: Thessaly, Plastira lake ©GNTO/Y. Skoulas

We plan to achieve our ambitious goals with the help of available European financial instruments—the National Recovery and Resilience Facility, Modernization Fund, Competitiveness and Cohesion Programme and others

Maria Levanti
The Greek Ambassador to Serbia

energy sources. The National Energy Programme has set specific energy and climate goals to be achieved by 2030. Cumulatively, RES units, mainly PV, reached 6.5GW in the national power distribution grid in 2022 compared to 4GW in 2019, while the capacity is expected to exceed 8.7GW based on planned projects for 2023.

Q. Greece aims to increase its green energy capacity significantly. How will you make that happen?

A. The National Energy and Climate Plan (ESEK), which covers the period from 2021 to 2030, has set the ultimate goal of RES covering 60 per cent of consumption. To achieve this, initiatives are already being implemented to simplify and expedite the issuance of permits, the optimal integration of RES into power grids, the operation of storage systems, and the promotion of electromobility. RES already contribute more than 50 per cent to the country's energy structure.

Q. How will you reach the goal of zero greenhouse gas emissions in the near future?

A. The National Energy and Climate Plan's overall goal is to transition to climate neutrality by 2050 in a sustainable, fair, and cost-effective

Photograph: Kerkini lake ©GNTO/S. Mourelatou; (Levanti) courtesy of Maria Levanti

manner. As part of the Recovery and Resilience Plan, which covers various sectors, such as clean energy, green construction, sustainable mobility, sustainable agriculture and others, Greece allocates 37.5 per cent of the Plan's budget to climate goals. In recent years, harmful emissions of many elements found in air pollutants have been significantly reduced in Greece. According to the latest census data submitted by Greece to the European Commission, greenhouse gas emissions in the country were reduced by 28 per cent from 1990 to 2020. In 2019, Greece defined the implementation of special activities under the auspices of the National Air Pollution Control Programme (EPEAR), the improvement and modernization of air quality monitoring and the provision of timely submission of relevant reports, the reduction of nitrogen oxides and particles, also through the planning of fiscal and energy options and with the help of the European initiative Coal Regions in Transition as its priority goals, all to reduce the use of coal which households use for heating and limit harmful emissions of air pollutants.

Q. The Republic of Greece ranks 28th on the EPI list (Environmental Performance Index) out of 170 countries. How did you make progress in environmental preservation, and what have been the priorities along the way?

A. Environmental legislation in Greece follows international and European coordinates. It is worth noting that some legal regulations concerning environmental protection were pas-

WASTE MANAGEMENT

Regarding waste management, the new national plan stipulates several reforms in Greece. Ambassador Levanti says that these reforms include revising the waste management law to create sustainable sanitary landfills and recycling infrastructure while encouraging municipalities and cities to achieve higher recycling rates and implement separate waste collection. The reforms envisage the expansion of the "producer's responsibility" system, better operations of sorting facilities and the simplification of the law on "green labels".

Photograph: Peloponnese, Dimitsana ©GNTO/K. Kouzouni

sed very early. For instance, the legal definition of national parks has been institutionalized since the 1930s.

Regarding nature protection, the Greek network of protected areas within the EU borders, Natura 2000, is now considered complete. As for simplifying administrative structures and procedures for implementing environmental legislation, some recent steps in that direction included simplifying risk and environmental impact assessment procedures and the implementation of European directives on natural habitats and industrial gas emissions. Greece's environmental investments amounted to 0.72 per cent of the country's GDP in the period from 2014 to 2020, while from 2021 to 2027, it is estimated that they will exceed 1.12 per cent of GDP.

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Q. Greece has very developed tourism. How do you meet increased water needs during very sunny days in the summer, when there is a lot of pressure on water resources?

A. The growing demand for water and the frequent adverse weather conditions due to climate change have significantly burdened freshwater sources in Greece. Our country has a register to control water withdrawals. The marking of water intake points is a positive step, as it also collects information on inactive and active water intake locations. Specific measures have been implemented for the summer period to ensure a full water supply to the island areas during the tourist season, such as desalination plants on the Aegean islands.

Q. How is Greece dealing with the challenges of adopting circular economy principles? What results has the country achieved so far in this regard?

A. In light of the new EU circular economy action plan, Greece adopted its national strategy in this segment in November 2021, with a corresponding operational plan. The operational plan includes a series of activities to be implemented until 2025, which are mainly focused on waste management with an emphasis on products with a high potential for circularity, such as electronics and items related to information and communication technologies (ICT), batteries and vehicles, packaging, plastics, textiles, buildings, food waste and water consumption. The landfill rate has decreased in recent years, while the recycling rate has increased slightly.

Photograph: Epirus, Ioannina, Kaledonia ©GNTO/Y. Skoulas

Although, according to the relevant data, resource productivity in Greece is slightly lower than the EU average, it has been steadily increasing over the last decade. Progress has also been made regarding the legal and institutional measures needed to increase waste recycling, particularly by introducing a new landfill tax.

Q. How is your country overcoming the challenges imposed by the energy crisis?

A. Our country undertook several short-term and long-term measures to overcome the challenges imposed by the energy crisis. Short-term measures relate to providing financial support to households, businesses, and public bodies. In 2022, this support amounted to 10.6 billion euros, of which 4.8 billion euros came from the state budget, while the rest came from the income of the Energy Transition Fund. These measures include subsidizing electricity and natural gas tariffs for households and businesses, reducing value-added tax (VAT) on animal feed and fertilizers, financial support for vulnerable households, refunding the costs of motor fuel for households, oil subsidies, tax breaks, subsidies for farmers, etc.

In the long term, Greece has implemented measures aimed at diversifying its energy sources through the promotion of RES and investments in the establishment of natural gas storage and distribution hubs, as well as reducing energy costs and increasing

According to the latest census data submitted by Greece to the European Commission, greenhouse gas emissions in the country were reduced by 28 per cent from 1990 to 2020

Photograph: Peloponnese, Mani, Vathia ©GNTO/EFili

For the summer period, specific measures have been implemented to ensure a full water supply to the island areas during the tourist season, such as desalination plants on the Aegean islands

energy efficiency. According to data collated by the International Energy Agency, in 2022, Greece ranked second in the world, after Spain, in terms of the installed production potential of photovoltaic units in terms of total demand, with 17.5 per cent versus 8.7 per cent, which is the EU average. Two electric power grid operators sent definitive offers for connecting RES stations with a total capacity of more than 11.5GW to the national power grid. If the already installed RES capacity in the country is taken into account, then the achieved result of approximately 24GW already exceeds the 15.1GW target of the current ESEK for 2030.

Q. Under the auspices of the traditional friendship and good relations between our two countries, developing cooperation with Greece regarding environmental protection is extremely important for Serbia. What is the current cooperation based on, and are joint projects planned?

A. Greek and Serbian environmental protection ministries signed the Memorandum of Understanding covering environmental protection issues in Belgrade in 2019. This agreement is the basis of cooperation in this area. It proves that Greece is determined to support Serbia's path towards joining the European family and, at the same time, a joint path to improving living conditions and the environment and the well-being of the societies of our two countries. The Serbia-Greece Business Forum was also held, with the participation of 90 representatives of Greek and Serbian companies and organizations from the environmental protection segment. At the same time, the line ministries have already discussed the exchange of information, experiences, plans and know-how related to delignitization, to boost environmental protection, social cohesion and economic development of the former lignite regions.

Q. Serbia is on its way to becoming an EU member. What are your tips for our country on this path and how to achieve that accession goal faster?

A. Bearing in mind the protracted war in Ukraine and geopolitical severe risks for our neighborhood, we must make every effort to maintain momentum on the region's path to EU membership. Investing in EU enlargement policy is vital for security and stability in Europe. Serbia is the EU's key partner. Greece practically supports Serbia on its road to EU membership since it already signed a Memorandum of Cooperation with Serbia in 2010 to expedite its accession process by providing knowledge and experience to the Serbian public administration.

Our country firmly and consistently supported opening clusters 3 (inclusive growth and competitiveness) and 4 (green agenda and sustainable connectivity) at the last two EU-Serbia intergovernmental conferences. At the same time, Greece recognizes and welcomes the efforts of the Government of Serbia to accelerate the reforms needed for Serbia to join the EU, with special emphasis on the rule of law and the fight against organized crime and corruption. The economic and investment plan for the Western Balkans stipulates opportunities for implementing projects that will modernize the region and accelerate the EU integration process. We are ready to work with you to make the best use of it, as well as on other projects with regional impact for the benefit of our two countries. Regarding energy and the environment, it is clear that they go beyond the framework of national strategies and require close cooperation between countries.

Our country is ready to support Serbia and cooperate even more closely with it in delignitization, since certain regions in both countries share quite a lot of similarities, as well as to assist by providing knowledge in connection with the absorption of EU funds, which can give a significant development boost to the Serbian economy and contribute to the creation of a sustainable and green economy and society.

Interviewed by: Mirjana Vujadinović Tomevski

HOW TO DEVELOP ELECTROMOBILITY IN SERBIA FASTER?

Electrification is one of the global goals because it is the only way to reduce emissions of harmful gases generated by traffic. Experts predict that, by the end of 2030, we will have seen an expansion of electric vehicles, which perfectly fits into the plan to achieve climate neutrality, which aims to reduce greenhouse gas emissions.

The automotive industry is turning around and is already investing in the mass production of electric vehicles, while internal combustion engines (IC engines) are slowly, albeit very slowly, leaving the production lines. The development of electromobility is also connected with the development of the charging network for electric vehicles. Unlike gas stations, which are well distributed, there are still not enough places to charge electric cars. That is why we need to work on the development of charging infrastructure, and this is where the most is expected from the Government, the line ministry and public companies. We spoke with Miroslav Alempić, Assistant Minister for Road Transport, Roads, and Traffic Safety, about developing electromobility, an electric charger network and novelties prescribed by the Law on Planning and Construction.

Q. The Law on Planning and Construction introduces the term "electromobility". What novelty does this concept bring?

In cooperation with the line ministry, public company Putevi Srbije intends to install electric chargers on existing and new motorway segments

Photograph: Pixabay/Stevan Aksentijević

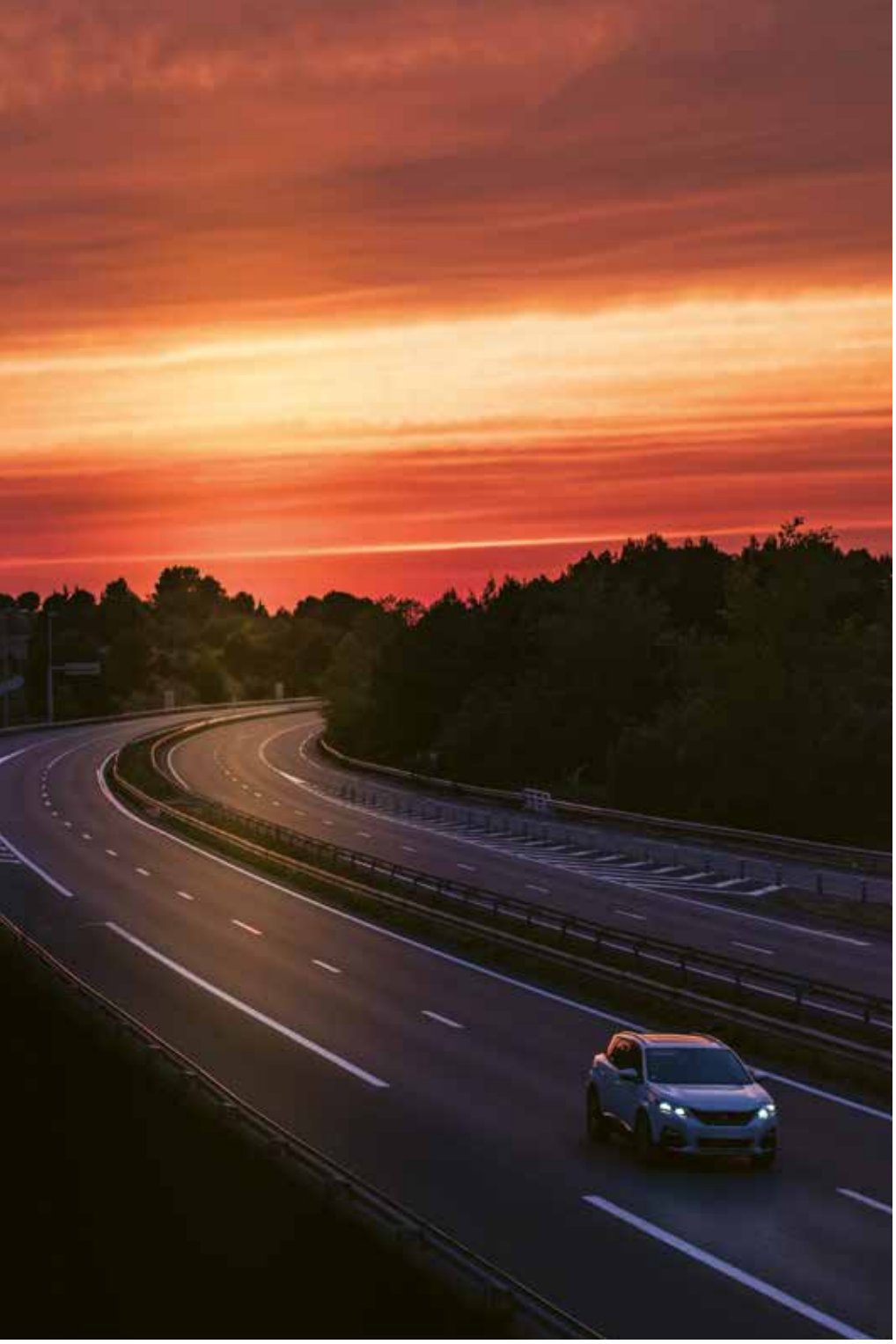
The Ministry of Construction, Transport and Infrastructure and the public company Putevi Srbije submitted an initiative to the Ministry of Finance to amend the Law on the Use of Public Goods, which foresees a discount of up to 13 per cent on the payment of toll for electric vehicles, for all categories, providing that drivers use ENP

MIROSLAV ALEMPIĆ from 1995 to 2003, worked at the CIP Transport Institute on transport projects, researching how to improve, modernize, reconstruct and better organize railway transport and infrastructure for the needs of the development of intermodal transport and transport design. From 2003 to 2023, Mr Alempić worked in the Belgrade Building Land and Construction Directorate. He is a member of the Chamber of Engineers since 2004 and holds a design and construction license. From 2006 onwards, he actively participated in the working groups founded by the Ministry of Construction, Transport, and Infrastructure, which worked on developing intermodal transport and the construction of the Intermodal Terminal in Batajnica. From 2011 to 2013, he worked as an expert consultant in the Corridors of Serbia Company. In 2012 and 2013, representing the Corridors of Serbia Company, he was a member of the Expert Working Group of the Road Safety Coordination Body at the Ministry of Infrastructure and Transport responsible for developing the National Road Safety Strategy and Action Plan. He has abundant experience managing contracts for constructing large-scale facilities in line with FIDIC rules and EIB and EBRD procedures. He is also an expert in procedures related to drafting and writing technical documentation, as well as all guidelines for project implementation.

A. Electromobility is a new mobility concept that is one of the most efficient and environmentally friendly forms of transportation, especially if electricity is obtained from renewable energy sources. Electric-powered vehicles contribute to reducing greenhouse gas emissions and environmental pollution.

Electromobility aims to find a sustainable balance between people, vehicles and the environment.

Photograph: courtesy of Miroslav Alempić



Solutions for the issues related to the Green Agenda occupy a particularly important place in the amendments to the Law on Planning and Construction. Namely, Serbia is a signatory to the Green Agenda Declaration, which, among other things, incorporates recommendations on reducing air, water and soil pollution.

Respecting the objectives of the Declaration, following its competencies, with the amendments and additions to the Law on Planning and Construction, the Ministry of Construction, Transport and

Electromobility is a new mobility concept that is one of the most efficient and environmentally friendly forms of transportation

Photographs: (top left) Unsplash/Thomas Despeyroux; (bottom right) Unsplash/Michael Marais

Infrastructure facilitates the implementation of some of the recommendations stated in the Declaration, namely the development and promotion of electromobility, as an environmentally friendly mode of transport, through the development of the required infrastructure and the obligation to build it. First of all, it refers to the installation of electric chargers and the obligation that a certain number of electric chargers must be considered when constructing residential and business buildings, as well as petrol stations on motorways.

Q. When can we expect chargers for electric cars to be installed along the new roads, and at what will be their power?

A. In cooperation with the line ministry, public company Putevi Srbije intends to install electric chargers on existing and new motorway segments. Regarding the sections of first-A class roads under construction, such as the Moravian Corridor and Ruma-Šabac section, the plan is to install ultra-fast electric chargers, with a power of 175kW, at all major toll stations. The new chargers for electric cars will meet all the prescribed standards and be suitable for current and next-generation electric vehicles. Given that the amendment to the Law was passed, from now on, all new and old petrol stations on motorways are obliged to install their electric chargers.

Q. How many chargers for electric cars are there on Serbian roads?

A. We do not have a precise number of electric chargers in Serbia. The assumption is that there are about 100 of them and not more than 150 of different power, which is not enough, especially since there are not enough of them installed on motorways.

As part of the road modernization effort in our country, public company Putevi Srbije installed eight chargers for electric cars in the previous period, three of which are ultra-fast chargers with a power of 175kW, at strategically key points on the motorways, at the entrance to our country and toll stations Preševo, Šid, Dimitrovgrad and Subotica, as well as at the Belgrade toll station in the direction of Niš, on the plateau of the former Niš toll station (one in the direction of Belgrade, and the other in the direction of Niš).

Of course, apart from Putevi Srbije, petrol stations have also independently installed electric chargers. For example, OMV installed chargers for electric cars at the following stations Lapovo: Sever, Martinci 1, Doljevac, Gradina, Beška 1, Bačka Topola 1, Bubanj Potok, Novi Sad, Ruma, Kruševac and Vranje, including the strongest ones which power ranges from 150 to 180kW.

Q. Are electric car chargers going to be installed in the coming period, and what will be their capacity?

A. A plan is to improve the electric car charging network further. In addition to petrol stations, an increasing number of people are interested in setting up their networks of electric chargers, offering a variety of amenities for electric car owners. Public company Putevi Srbije plans to install an additional 10 electric chargers on the public roads it manages this year. The specified chargers will be of newer generation, with the possibility of upgrading.

The following locations have been preliminarily determined for the installation of new chargers:

- Čokot rest stop on the first A class state road No. 1, in the Niš-Preševo direction
- Lalinci rest stop on the first A class state road, in the Čačak-Belgrade direction
- Jerina rest stop on the first A class state road, in the Belgrade-Niš direction
- Toll station Šimanovci on the first A class state road, in the Belgrade-Šid direction
- Former toll station Sirig 1 on the first A class state road, Subotica-Belgrade road
- Toplik rest stop on the first A class state road, in the Niš-Dimitrovgrad direction
- Crvena Reka rest stop on the first A class state road, in the Dimitrovgrad-Niš direction

Photograph: Unsplash/Oxana Melis

- Korbevac reststop on first A class state road, No. 1, in the Niš–Prešev direction
- Subotica toll station on the first A class state road, in the Subotica–Belgrade direction
- Šid toll station, on the first A class state road, in the Šid–Belgrade direction.

The charging service at the chargers installed by Putevi Srbije is currently free to contribute to the revival and development of electric vehicle transport in Serbia. Putevi Srbije now covers the cost of electricity used by those chargers, but when the relevant legal conditions are met, a charging fee will be introduced. We also expect more petrol stations and rest stops to be supplied with green energy, which will be achieved by investing in renewable energy sources through solar panels on rooftops, petrol station parking lots and rest stops.

For example, a solar power plant at a petrol station can produce from 50 to 100,000kWh of clean electricity every year and thus offset between 20 and 30 per cent of the facility's total energy consumption.

Q. Does the Ministry of Construction, Transport, and Infrastructure plan to support owners of electric cars with some subsidy?

A. Clearly, subsidies provided by the Ministry of Environmental Protection have significantly increased the purchase of electric and hybrid cars in Serbia. We are working on other incentives, too. The Ministry of Construction, Transport and Infrastructure and the public company Putevi Srbije submitted an initiative to the Ministry of Finance to amend the Law on the Use of Public Goods, which foresees a discount of up to 13 per cent on the payment of toll for electric vehicles, for all categories, providing that drivers use ENP. New incentives are also being considered to give more benefits to owners of electric and hybrid cars in the coming period.

Q. How would you rate the course of traffic electrification in Serbia?

A. We have seen a clear trend of growing electromobility in Serbia. In the first seven months of this year alone, over 1,700 electric and hybrid cars were purchased. Although this is still a small number compared to more developed countries, the fact remains that electrification in Serbia is underway and is constantly growing. Everything points to the fact that electric vehicles are the future and will, without any major obstacles, replace vehicles that consume fossil fuels and pollute the environment. However, the road to widespread use of electric cars is challenging and hinges on many factors. Projections say that sales of electric vehicles will increase over threefold in some countries in 2030. Expanding the offer, reducing the prices of electric and hybrid cars, and developing the electric charger infrastructure will certainly accelerate traffic electrification in Serbia.

Q. What does the Ministry of Construction, Transport and Infrastructure expect to happen in the coming period regarding road traffic and road construction completion?

A. 484.9 kilometres of motorways and express roads are currently being built in Serbia. In 2023 alone, 39.9km of

Photograph: (top left) Unsplash/Nagy Szabi

motorways and express roads were built and commissioned, and the plan is to complete and commission the new motorway segments by late October, that is, 27.8 kilometres of motorway segments on the Moravian Corridor and 21 kilometres of the Ruma-Šabac motorway.

The plan is also to build more than 940km of motorways and express roads, of which the following sections are planned to be contracted this year alone - the Sombor-Kikinda express road, which is close to 186km long (the so-called Smajli), Slepčević-Badovinci road (15.3km long) and the Belgrade-Zrenjanin-Novi Sad road (105.4 kilometres).

In the coming period, we can expect to see the digitization of motorways and fast roads, the implementation of modern traffic management technologies on roads, tunnels and bridges, the tolls for heavy-duty trucks on the class one B express roads and state roads, as well as the measurement of the load on heavy-duty trucks and a higher road use fee for those trucks that exceed the permitted loads.

Q. What novelties does the Law on Planning and Construction bring?

A. Amendments to the Law on Planning and Construction prescribe many innovations, with the following being the most significant:

- Further improvement of the electronic building permit issuing system (CEOP);
- The implementation of new segments in the Green Agenda (thanks to a bylaw passed based on the Law on Planning and Construction), that is the obligation of public road managers and petrol station owners to install electric chargers on class one A state roads;
- Boosting energy efficiency;
- Increasing the responsibility of authorized persons in the procedures related to the issuance of construction documents;
- Abolition of the Law on Land Conversion Fee for certain population categories;
- Abolition of a special law for line infrastructure facilities;
- Establishment of the Spatial Planning and Urban Planning Agency of the Republic of Serbia;
- Increasing the number of bodies/organizations that can issue location information to public notaries;
- The introduction of the chief state urban planner;
- Better protection of protected natural and cultural areas with the Government adopting a spatial plan of special purpose areas;
- Boosting the activities of local governments concerning planning and spatial arrangement by prescribing the mandatory adoption of planning documents for at least 70 per cent of the construction area;
- The provisions of this Law are additionally specified and harmonized with the provisions of other, specialized laws, which all contribute to better application of this and specialized laws.

Interviewed by: Milica Radičević

Photographs: (top) Unsplash/Nagy Szabi; (middle) Unsplash/Markus Spiske

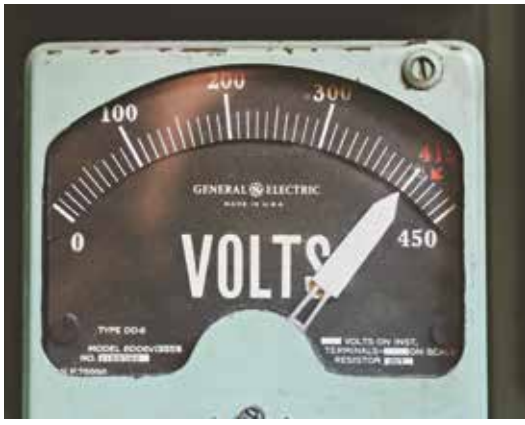
SUBSIDIES FOR NEW GREEN VEHICLES

With subsidies for electric and hybrid vehicles, the Serbian government wants to encourage individuals to opt for environmentally friendly cars. Thus, in 2020, the regulation on the conditions and method of implementing the subsidized purchase of new vehicles that have exclusively electric and hybrid drive, as well as cars that, in addition to the internal combustion engine (IC engine), also run an electric power unit (hybrid drive) was adopted. Funds in the amount of 294 million dinars were allocated this year, which is twice as much as last year. The money will be disbursed by the Ministry of Environmental Protection, based on the received applications for funding, up to available funds.

Companies/legal entities, small business owners and natural persons have the right to subsidized purchase of vehicles, and they can submit their application by October 31.

This right is not available to companies/legal entities and small business owners who have or will have the right to subsidized purchase of passenger vehicles to buy new taxis to be used as public transport.

The regulation focuses on the fact that the subsidies are valid for new vehicles, those that have never been used nor registered until the submission of the application for subsidized purchase.



Photographs: (top) Unsplash/Juice: (bottom) Unsplash/Thomas Kelley

The following amounts of subsidies are available for the purchase of a vehicle:

250 euros for L1 and L2 vehicles (mopeds and light tricycles)

500 euros for vehicles of L3 to L7 types (motorcycles, heavy tricycles, quads)

5,000 euros for vehicles of M1 and N1 type, exclusively powered by electricity

3,500 euros for vehicles of M1 and N1 type, powered by a hybrid drive, which, in addition to an internal combustion engine, has an electric drive, as well as for electric vehicles with a built-in system for extending the autonomy of movement + carbon dioxide (CO2) emissions of up to a maximum of 50g/km

2,500 euros for M1 and N1 type vehicles powered by a hybrid drive that, in addition to the internal combustion engine, have at least one electric motor and CO_2 emissions of up to a maximum of 140g/km.

Disbursement of subsidies

As explained, legal entities, small business owners and natural persons who buy a vehicle in instalments are required to conclude a financial leasing contract before the subsidy is disbursed and pay an amount of at least 15 per cent of the purchase price of the new vehicle to the financial leasing provider as a down payment for the approval of the leasing contract.

If they buy a new vehicle with their funds, the subsidy is disbursed after submitting proof of the paid part of the purchase price. Then, within 15 days from the date of receipt of the decision, they are obliged to submit to the Ministry a vehicle purchase agreement, an advance invoice (if an advance was paid), a preliminary invoice and proof of payment of the remaining purchase price of the vehicle, i.e. a relevant bank statement.

Suppose the vehicle is purchased through financial leasing. In that case, they must submit to the Ministry a contract on financial leasing, a confirmation from the leasing company about the down payment amount and proof of the payment made within 15 days of receiving the Ministry's decision.

Awarding subsidies is terminated if the amount of allocated funds in the current year is insufficient for the approval of all properly submitted applications.

For the fourth consecutive year, the Ministry of Environmental Protection facilitated the purchase of electric and hybrid cars as part of implementing measures to improve air quality and the quality of the environment. The data also show that citizens understand the importance of more environmentally friendly transport. Every year, an increasing number of such vehicles are purchased with the help of state subsidies. In 2020, that number was 112. In 2021, it was 504; in 2022, a record 715 vehicles were purchased with the help of state subsidies.

Prepared by: Milica Radičević

Photograph: Unsplash/Martin Katler

ENERGY REHABILITATION CONTRIBUTES TO ENERGY SAVING AND ENVIRONMENTAL PROTECTION

The EU, the Serbian government and the Raška municipality allocated more than 5.3 million euros to construct a wastewater treatment plant

Raška, a small town in the southwest of Serbia, situated between the mountains of Kopaonik and Golija, on the rivers Ibar and Raška, works efficiently to preserve the environment.

This municipality is one of the leaders in the district in terms of the number of subsidized solar power plants for private use, and it is working on establishing a regional waste management system and plans to invest in improving energy efficiency in the coming period. We spoke with Nemanja Popović, the Mayor of the municipality of Raška, about subsidies for solar power plants, air quality control, remediation of landfills, and wastewater processing, as well as plans for investments in environmental issues in the coming period.

Q. Last year, the Ministry of Mining and Energy and the municipality set aside 28 million dinars for subsidies for private-use solar power plants. How big is the interest in these subsidies, what are the plans, and when will the other public calls be launched?

A. The state's strategic determination is to implement a responsible energy policy and work on improving energy efficiency following domestic legislation and EU directives. Energy policy programmes are implemented to boost energy efficiency. The effects of such measures are multiple and long-lasting and contribute to the safety of the electricity supply, the industry's competitiveness, the increase in the population's living standard and the reduction of the negative impact of energy on the environment. With the support of the line ministry, the Raška municipality started to implement the first energy rehabilitation measures in 2021 to improve the energy-related features of residential buildings, save energy and reduce heating costs.

A total of 17 million dinars was earmarked to implement three measures: procurement and installation of thermal insulation materials, procurement and installation of windows and exterior doors with accompanying construction works, and procurement and installation of biomass boilers/stoves. The Ministry allocated 5 million dinars to the municipality of Raška, while 12 million dinars were allocated from the local budget. At that time, 208 beneficiaries—205 owners of family houses and apartments and three housing associations—were eligible

Photographs: Municipality of Raška

In the case of industrial companies, regular air pollution measurements are carried out according to the law and emissions are controlled within the prescribed permitted values

NEMANJA POPOVIĆ was born on 26th February, 1990 in Novi Pazar. He finished elementary school in Raška and Nikola Tesla High School in Leposavić. He graduated from the Department of History at the Faculty of Philosophy in Kosovska Mitrovica and got his master's degree in National History. Since 2016 and then in 2020 (in two convocations), he has been a local MP in Raška. Mr Popović served as a member of parliament in the 12th convocation of the National Parliament from 2020 to 2022. He works as a history teacher at the Raška Elementary School.

for financial support. The Solar Panel Installation Programme was given almost six million dinars in the same year, and 14 citizens opted for this type of support. A year later, 240 owners of apartments and family houses signed contracts on the allocation of subsidies for boosting energy efficiency. The Ministry of Mining and the Municipality of Raška allocated nearly 28 million dinars to implement the programme. Another 7 million dinars have been earmarked for installing solar panels—the Ministry of Mining and the municipality gave 3.5 million dinars each. A competition for the allocation of subsidies for the installation of solar panels is underway.

Q. What is the situation in the municipality of Raška regarding air pollution?

What kind of air do people breathe, and how is the air quality measurement control performed considering there is a developed industry there and households that use solid fuel for heating?

A. The only official air quality measuring station on the municipality's territory is located in the Kopaonik National Park (more than 34 km from the town centre), where SO2 (sulfur dioxide) and O3 (ground ozone) are monitored, and the data are published on the website of the Environmental Protection Agency. In the last month, there were no violations of the monitored parameters. Since there is no measuring point within the state air quality monitoring grid in other parts of the municipality, nor has local monitoring been established, it is impossible to reliably determine whether the prescribed limit values of air pollutant emissions are exceeded in any area. We can assume that pollution exists, especially in winter, and that home fireplaces cause it. The local government participated in the project to replace the fireplaces in households, so I hope that the residents of Raška will also have better-quality air in the winter months. The industrial zone is separated from the residential one, and possible pollutants are subject to the control of the environmental protection inspection. In the case of industrial companies, regular air pollution measurements are carried out according to the law and emissions are controlled within the prescribed permitted values. The municipality of Raška does not have a heating plant, and the main road does not pass through the town centre, but

it detours in the direction of Kosovska Mitrovica and Novi Pazar. That is why monitoring of the air pollution emission has not been established.

Q. What is the municipality doing to rehabilitate landfills, what has been done so far and what are the plans? How do you plan to solve the problem of solid waste disposal?

A. Waste management on the municipal territory is not carried out following the prescribed standards because the collected municipal waste is disposed of in an unsanitary landfill, which is also designated as a landfill for the disposal of construction waste and, as such, is a major environmental risk. According to the 2010–2019 Waste Management Strategy, together with the municipalities of Vrnjačka Banja and Tutin and the towns of Novi Pazar and Kraljevo, Raška was included in the waste management region. In the meantime, activities have been carried out to establish a regional waste management system for the municipalities of Raška and Tutin and the town of Novi Pazar, which form a waste management region according to the 2022–2031 Waste Management Programme in the Republic of Serbia. The conceptual project titled "Remediation, closure and recultivation of the

RECOGNITION FOR COMMITMENT TO IMPROVING AIR QUALITY

With the support of the Government of Norway, at the final meeting related to the *School for Better Air Quality* project in Belgrade, UNICEF's office in Serbia and the Standing Conference of Towns and Municipalities (SKGO) awarded the municipalities of Raška, Osečina and the town of Užice for the biggest progress they made in 2023 in reducing air pollution, with the help and consultations with young people at the local level. The Raška municipality also received air filters that will be installed in facilities or institutions that work with children or young people. "This recognition means that we have achieved the project's goal, which was to raise the awareness of school children, parents and teachers about the negative impact of air pollution, and the levels of air pollution and its harmful effects on health, but it is also an indication that we are on the right track, together with young people, in being responsible and joining in and planning further activities that will protect and improve the quality of the ambient air", says Mr Popović.

ENERGY POLICY MEASURES

The new public call for implementing energy policy measures has been launched following the new requirements and covers the period from 2023 to 2027, with a total budget of 70 million dinars. “The municipality allocated 5 million dinars from its budget for the first round. It is up to the citizens to decide which measures will be implemented first”, Mr Popović adds.

existing unsanitary solid waste landfill in the municipality of Raška” was carried out by the Architectural and Construction Institute from Novi Sad in 2019. There is also a project that stipulates issuing a building permit for the construction of a Recycling Centre in Raška at KP 1/41 KO Raška, in the Razdolje location.

In the Batnjik area, halfway along the course of the Raška River from Novi Pazar to Raška, a net dam was installed in 2017, which prevents plastic bottles, bags and other packaging waste from floating down the river. The dam is located on a narrow stream of the riverbed. It is built of high-quality stainless steel that is 100 per cent environmentally friendly and does not damage the river ecosystem.

The packaging waste collected in this way is then reused, thanks to the recycling industry.

The Raška Public Utility Company (JKP Raška) installed special bins for ash disposal in several locations, ensured the free removal of bulky waste according to the established schedule and installed larger containers in places with a higher frequency of garbage disposal. In the last twenty years, the relevant municipal services and PUC Raška have regularly removed landfills and recultivated the terrain. In cooperation with the line ministry, large landfills were rehabilitated years ago in the municipality of Raška. Certain areas are covered by video surveillance to establish an additional supervision system and help with penalizing those individuals or companies who damage the environment through their negligent behavior. Despite all the activities aimed at environmental protection, requests and appeals sent out by the relevant services and environmental associations, we are still witnessing the emergence of new illegal landfills, which spoil the environment and pollute the land, water and air. Suppose we all preserve nature, park areas, promenades and riverbanks, i.e. everything that is recognizable and characteristic of Raška. In that case, we will have a more beautiful town and higher quality of life. I would like to believe that all residents love Raška equally and that we want the town to have a clean and orderly environment. Nature has been generous to our town and its surroundings. It is up to us whether we will succeed in fighting bad habits and persevere in our intention to leave a healthy environment for generations to come.

Q. How does the wastewater treatment plant work in Raška?

A. The EU, the Serbian government and the Raška municipality allocated more than 5.3 million euros to construct a wastewater treatment plant. Furthermore, the main sewage collector was built, the sewage grid was extended to the nearby residential areas, the existing sewage network was rehabilitated, and a part of the existing raw water supply system was reconstructed. The wastewater treatment plant was commissioned in 2020 and is located in the Rvati area on the banks of the Ibar River. Most municipal wastewater from the town and surrounding areas is transported, collected and processed here. Raška, Varevo, Vlasevo, Rvati, Đurovći and Draginić are all included in this system, which prevented the discharge of untreated wastewater at several former outlets along the Raška River. The facility is designed to cover about 16,500 inhabitants. All wastewater that is collected here is filtered and, as such, is released into the Ibar. The quality of purified water follows the relevant wastewater regulation. The plant has 13 employees, including six operators who monitor the entire process 24 hours a day via the SCADA system. In the event of a disturbance, immediate action is taken to remedy the disturbance.

Q. How have you invested in protecting natural habitats, and are these areas important for tourism potential?

A. The municipality has abundant and varied biodiversity and important protected areas. Kopaonik National Park spans 11,810 hectares of land, and in terms of the number of endemic species, it is one of the most significant biodiversity hubs of Serbia's endemic flora.

The area of Mount Golija enjoys first-grade protection as a nature

the mentioned period. We plan to build a wastewater management system and clean the riverbeds of the Ibar and Raška rivers and other watercourses. The goal is to have clean and preserved soil and air in Raška. We will implement the following measures to achieve this goal—drafting and adopting a local environmental protection programme, establishing a regional waste management system, increasing the areas with organized municipal waste collection, educating the local population about the importance of preserving and improving the state of the environment and about proper waste disposal, rehabilitating and recultivating unsanitary landfills and removing unregulated landfills, as well as increasing the forestation of the municipal territory. Our priorities also include more efficient and rational use of energy. It will be accomplished by drafting and adopting the local Energy Efficiency Programme, improving the energy efficiency of public buildings and implementing incentive measures for the energy rehabilitation of residential buildings, family houses and apartments.

park, i.e. as a natural asset of exceptional importance. In our municipality, the protected area is located in the Kruševica Community. Due to the exceptional preservation of the original natural and cultural values in the area, following the proposal of the Institute for Nature Protection of Serbia, the MAB/UNESCO committee declared Golija-Studenica in the Golija Nature Park a biosphere reserve, spanning 53,804 ha. Green areas in the municipality include forests and greenery, such as the Centar town park, which stretches on 0.35ha in the urban zone, and the Borjak zone park, which stretches along the left bank of the Ibar, spanning five hectares.

31,535.31 hectares of land here are forests, which is 47 per cent of the total area of the municipality of Raška. The degree of afforestation in the municipality is tantamount to the afforestation level in the Raška district and higher than the afforestation in Serbia, which is 29.1 per cent. Allocations from the municipal budget for environmental protection in the last three years ranged from 3 to 4.4 per cent.

Q. Which investments in environmental protection and ecology-related issues are you planning to make in the coming period?

A. According to the 2023-2029 Municipal Development Plan, under the auspices of development direction 1—Environmental protection and communal infrastructure—we have set priority goals related to environmental protection, which will focus on protected and clean Raška rivers in

Interviewed by: Mirjana Vujadinović Tomevski

THE TREND OF GROWING ELECTRIC CAR SALES

The decarbonization of road transport, which accounts for more than 15 per cent of global energy-related emissions, is a challenge that almost the entire planet is grappling with. Alternative fuel vehicles, which would replace diesel and gasoline, are one way of reducing emissions. However, electric vehicles remain the key to achieving zero emissions.

The latest Announced Pledges Scenario shows the extent to which the set goals for getting to net zero emissions by 2050 are achieved. The Scenario was published by the International Energy Agency (IEA) in August 2023, and it is estimated that the growth from the current 17 million electric cars to 800 million by 2040 would lead to a reduction of transport emissions by 36 per cent.

The latest Announced Pledges Scenario shows the extent to which the set goals for getting to net zero emissions by 2050 are achieved

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It is estimated that 14 million vehicles will have been sold by the end of the current year. If the forecasts are true, sales of electric cars could account for 18 per cent of total car sales this year

The data also show that a significant increase in the sale of electric vehicles worldwide was recorded from the beginning of 2020 to the end of 2022 when, in three years, sales increased from 4 to 14 per cent. In 2022, sales exceeded 10 million vehicles and taking 2022 as a benchmark year, the People's Republic of China had the highest global sales of electric cars, followed by Europe and the US. With such a result, China's share in world sales was 60 per cent.

The EU has been investing significant effort in the decision-making process to reduce carbon dioxide emissions, including the decarbonization of transport.

One of the more important decisions, which is certainly an incentive for increasing the sale of electric vehicles, is that from 2035, only cars with zero emissions will be sold, with possible exceptions that vehicles with internal combustion engines (IE engines), which rely on e-fuels, will remain in use.

Although binding measures and national policies implemented by countries worldwide are good incentives, financial measures remain the most important ones.

According to the IEA, in 2022, the global spending on electric cars went up by 425 billion dollars, and only about 10 per cent of that spending could be attributed to government support and incentives, while the rest comes from individual consumer money.

Government incentives will not be enough to make electric cars more affordable, depending on the overall market situation. Namely, as the electric car market becomes increasingly competitive, the range of affordable models grows.

Compared to 2018, the number of available models more than doubled in 2022, reaching 500. Speaking of prices, if crude oil prices remain at last year's quite high level, that could also boost electric car sales.

Growth in sales is expected to continue in 2023, as evident in the results that we are going to see at the end of this year. It is estimated that 14 million vehicles will have been sold by the end of the current year. If the forecasts are true, sales of electric cars could account for 18 per cent of total car sales this year.

Excluding the three markets mentioned above, sales of electric cars in the rest of the world, especially in underdeveloped and developing countries, are still low. The main reasons are high vehicle prices and underdeveloped charging infrastructure. However, India, Thailand and Indonesia should be singled out, where sales in 2022 more than tripled compared to the data from the previous year.

The increase in electrification is not only carried out in the car segment. In 2022, electric tricycles accounted for more than half of all registered three-wheelers in India. The reasons for this stronger growth trend are also because they require the allocation of smaller financial resources.

According to IEA estimates, if the growth of electric car sales from previous years continues, carbon dioxide emissions from cars will be reduced to net zero by 2050.

Prepared by: Katarina Vuinac

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THE PATH TO THE DEVELOPMENT OF E-MOBILITY

In cooperation with the Faculty of Mechanical, Traffic and Electrical Engineering, the National Association of Autonomous and Electric Vehicles (NAAEV) is holding the sixth E-mobility Forum in Belgrade on October 11 and 12. The Forum will be organized under the auspices of the Ministry of Science, Education and Technological Development and the Ministry of Construction, Transport, and Infrastructure. The event will focus on challenges and innovative technological solutions in autonomous and urban mobility, including industry, academia, and city representatives. We spoke with Dalibor Ignjatović, Director of Innovation at NAAEV, about how far Serbia is on the road to the development

of e-mobility and what measures should be implemented for people to travel safer and faster with electric vehicles.

"We started in 2015 with the idea of incorporating Serbia into the changes underway in global mobility at that time. We aim to direct Serbian scientific research and industrial potential towards cooperation on projects focused on innovative urban mobility solutions. Thanks to a contract, we have included the 11 largest technical faculties in Serbia and 14 domestic high-tech companies. In 2019, NAAEV received the status of HUB for Serbia from the European Institute of Innovation and Technology—Urban

Photographs: (bottom left) Unsplash/Chuttersnap; (top middle) Unsplash/Tabea Schimpf

Bearing in mind the analysis that the World Bank commissioned, the assumption is that the growth of the number of battery-powered electric vehicles and hybrid electric vehicles in Serbia on an annual basis in the period until 2030 will amount to five per cent

DALIBOR IGNJATOVIĆ was born in Paris on May 9th, 1982. He graduated from the electrical engineering school ESIGELEC in Rouen, France. He has a master's degree in electrical engineering and high-voltage transmission. He has more than 15 years of professional experience in technical, commercial and management functions, including 10 years in the automotive industry on high-frequency communications and electrical distribution systems. Mr Ignjatović spent his professional career in an innovative and creative environment and worked in the research and innovation sector, from designing to managing projects and teams. He came to Serbia in 2020 and joined NAAEV in 2021.

Mobility (EIT-UM), and this year we became a member of the European Association Connected, Cooperative and Automated Mobility (CCAM). As a result of the engagement of its capacities within a significant number of European urban mobility projects, NAAEV has become a contact point for scientific and research institutions, companies, and cities in Serbia, which the Association directs and includes in projects related to development, research and testing of electric and autonomous vehicles, infrastructure, and their components".

Q. How have the authorities responded to NAAEV's activities on engaging scientific and research potential in the development of electric vehicles?

A. Bearing in mind the scope and dynamics of changes in electric and autonomous transport, NAAEV forwarded several strategic initiatives to the Serbian government and line ministries regarding developing this field in our country. These include the 10-point Studies Programme for Electromobility in Serbia and the Guidelines for the Development of Electromobility in Serbia from 2019 to 2025, which contains 10 measures, the implementation of which puts Serbia on an efficient path towards e-mobility. We proposed the formation of an interdepartmental working group and the deadlines within which these measures could be implemented. However, so far and despite the steps towards the improvement of e-mobility that are being undertaken in Serbia, a lot of things are done slowly and are unsynchronized, because a clear institutional infrastructure has not been established yet, nor the necessary regulatory and strategic environment.

Q. According to your estimates, how many electric four-wheelers are there in Serbia and how many chargers? How do you evaluate infrastructure development, and how can e-mobility develop faster?

Photograph: courtesy of Dalibor Ignjatović

A. This question is seemingly easy to answer. According to certain criteria, plug-in hybrid electric vehicles and hybrid vehicles can be counted as e-vehicles. These two categories, as well as Battery Electric Vehicles, significantly contribute to green transport implementation.

As part of the study on the development of electromobility for the city of Belgrade from 2022 to 2030, which was carried out by NAAEV and commissioned by the World Bank, an assessment was made according to which, by the end of 2022, almost 11,500 e-vehicles in Serbia that belong to the aforementioned vehicles should have been registered, which is less than one per cent of the total number of vehicles in the country. The study also showed that over 90 per cent should have been plug-in hybrid vehicles. The key point of the transition towards the electrification of private and public transport vehicles is the establishment of an adequate e-infrastructure, i.e. the availability of charging stations. In addition to undefined regulatory aspects in Serbia, the limited number

IMPROVING INFRASTRUCTURE

In April 2022, NAAEV forwarded to the Serbian government an initiative for the infrastructural regulation of the status of electric chargers for e-vehicles. The initiative will make it possible to simplify the installation of the infrastructure for charging e-vehicles, which will make the issuance of a building permit for the installation of chargers unnecessary. They could be installed and connected to the power and telecommunication grids based on the decision made by the public company Putevi Srbije or the Transport Secretariat.

"The Association proposed that the Ministry of Mining and Energy recognize chargers as a special category device and order the nationwide power distribution company and suppliers to include this category of power consumption in the grid so that the regulatory body would approve the tariff for this type of power consumption (as was done for public lighting) and the prices charged by the power distribution company for the connection to the power grid. One of the measures would define this price and tackle the issue of whether the excise tax should be paid on the consumption, as in the case of oil derivatives", said Mr Ignjatović.

The answers that NAAEV received from the Ministry of Mining and Energy and the Ministry of Construction have not provided a concrete solution to this complex matter.

Photograph: courtesy of Dalibor Ignjatović

of charging stations for electric vehicles is one of the main obstacles to carrying out the electric transition easily and quickly.

Q. According to your estimates, at what rate will the number of e-vehicles and chargers increase in Serbia in the coming period? How can we improve the charger network?

A. Bearing in mind the analysis that the World Bank commissioned, the assumption is that the growth of the number of battery-powered electric vehicles and hybrid electric vehicles in Serbia on an annual basis in the period until 2030 will amount to five per cent. As for chargers, according to the same analysis, Serbia will need slightly more than 2,000 EV charging stations by 2030 to fulfil the needs of the expected number of users. I would like to underline that this is not only about the number of required chargers but also their structure and appropriate spatial arrangement. Fast charging (7—22 kW) and Rapid charging (50—99 kW) chargers will be installed in urban areas, while Ultra-rapid charging (100—360 kW) chargers will be installed on motorways.

Q. How are autonomous transport solutions tested in Serbia? Where do we stand when it comes to regulations for autonomous vehicles?

A. Driverless autonomous vehicles are slowly becoming a reality, and statistics show that human error is the cause of more than 90 per cent of traffic accidents. In some countries, robot taxi services are already functioning and in addition to transporting passengers, robotic delivery in urban areas and, in particular, solving long-distance transportation of goods is a very near future. America and China are leading in developing legislation, which is the primary prerequisite for further developing and applying these technologies. Europe is still far behind in this matter. That's why the arrival of Self Driving Group, a subsidiary of Yandex, which announced the testing of autonomous vehicles in Belgrade, gives Serbia a significant opportunity to become one of the first European countries to implement these state-of-the-art services.

The area where the Hungarian e-mobility center is located, in which more than 150 million euros have been invested, spans about 250 hectares of land, and its construction was completed in 2022

Q. How far ahead is establishing the 5G research and development test center for autonomous vehicles and drones, and what is the goal of this center?

A. We sent the initiative to construct a 5G research and development test center for autonomous vehicles and drones, according to the Serbian government, in 2019. This infrastructural development project has the goal of bringing young people back back from abroad and retaining young professionals. It will be implemented by building regional technical and technological infrastructure and creating a better business environment by making the Center available to the academic community, industry and small existing and startup companies that develop and test innovative products.

Photographs: (bottom) Unsplash/Why Kei; (middle right) Pixabay/Autoknipser-de

consortium leader, NAAEV signed a contract with the mechanical, traffic and electrical engineering faculties of the University of Belgrade stipulating the development of the concept and preliminary design of the center.

Q. How high are the state's financial incentives for purchasing environmentally friendly vehicles? What non-financial incentives could the state provide to encourage the purchase of e-vehicles?

A. State incentives for purchasing battery-powered electric vehicles amount to 5,000 euros, while that amount for plug-in hybrid electric vehicles is somewhat lower and amounts to 3,500 euros. For hybrid electric vehicles, the financial incentive is 2,500 euros. Serbia is still in the early stages of e-mobility development, with very few electric vehicles, and existing measures are unsatisfactory.

In addition to implementing additional measures and subsidies for the purchase of electric vehicles, the state should lead by its own example to support the electric transition through the electrification of its own vehicle fleet.

The list of measures and subsidies is not limited, and each country adopts them following its interests (bonuses for recycling old vehicles, subsidies for the purchase of used electric cars, tax breaks for insurance and registration of electric vehicles, subsidies for infrastructure, allowed use of the yellow traffic lanes, free parking and other).

Q. Which country in the region is a good example of effective cooperation between the state and the scientific community in the development of e-mobility? What did that country do to improve such innovations?

A. That's definitely Hungary. The long tradition of the automotive industry was certainly a good base, but the essence lies in the political vision of the Hungarian government.

Photograph: Unsplash/Alessio Lin

Five years after launching the 5G research and development test center for autonomous vehicles and drones, the project would generate an annual social income of more than one billion euros.

Assuming that the net salary of an engineer working at the center is 200,000 dinars, the center would be able to create the potential for connecting with global technological giants. In June of this year, as a which we participated in several joint urban mobility projects. If they decide to build their own center in Serbia, valuable Hungarian experiences are available to us.

Interviewed by: Mirjana Vujadinović Tomevski

INTERNATIONAL E-MOBILITY FORUM

The 2023 E-mobility Forum will focus on energy-related technologies in the automotive industry and e-mobility in general. Dalibor Ignjatović says that the special focus of the sixth will be directed towards the topics such as Future Mobility, Mobility and Energy and Sustainable Logistics. More than 20 speakers from Serbia, Europe, the United States and China will participate. A special event segment will be dedicated to announcing the winners of the Student Innovative Mobility Challenge (SIM-C) student team competition.

In various ways, the Hungarian state invests more than 500 million euros per year in the academic community, small and medium-sized enterprises, and startup companies to support the development of innovative solutions.

In October 2019, NAAEV organized a visit of 16 professors and doctors of technical sciences from the faculties of Belgrade, Niš and Novi Sad to ZalaZone. It is the area where the Hungarian e-mobility center is located, in which more than 150 million euros have been invested. It spans about 250 hectares of land, and its construction was completed in 2022. During the visit, we signed cooperation agreements with the Budapest Faculty of Economy and Technology, one of the founders of ZalaZone, and the Zone Cluster organization, with

Five years after launching the 5G research and development test center for autonomous vehicles and drones, the project would generate an annual social income of more than one billion euros

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Photographs: BMW

BMW IX

It is an attractive SAV model was created for electric mobility. Thanks to efficient BMW eDrive technology and fully electric four-wheel drive, the BMW iX achieves the range of 403 km to 633 km according to the WLTP standard (depending on the version and equipment of the model) and delivers impressive acceleration. The intelligent BMW Operating System 8 is used intuitively, and it made its debut on this particular model. With two powerful electric motors and BMW xDrive electric four-wheel drive, the BMW iX offers outstanding performance and unique driving experience.

BMW IX1

The all-electric BMW iX1 exudes energy and functionality, as well as the ability to inspire the driver to explore new roads. The self-confident appearance of this model leaves a breathtaking impression, thanks to the modern design language and perfect proportions. Superior comfort in the interior is achieved thanks to the active seats with massage and lumbar function for sitting comfort. The modern multimedia cabin is created thanks to the innovative BMW curved touch-sensitive display and voice control concept. Its range is from 417 km to 439 km according to the WLTP standard (depending on the equipment of the model).

BMW IX3

The BMW iX3 model is characterized by attractive, sporty appearance, while the aerodynamic and blue elements emphasize the electric nature of this vehicle in full. With the range of 453 km to 461 km according to the WLTP standard (depending on the equipment of the model) with efficient consumption, this model is ideally adapted to any route. The BMW iX3 features state-of-the-art technologies that combine emission-free mobility with supreme comfort. Intelligent driver assistance systems can be easily controlled by voice command, which increases safety during the journey. More dynamic, efficient and innovative than ever, the BMW iX3 features the fifth generation of BMW eDrive technology. This attractive SAV offers top performance that will impress you every meter you drive.

BMW I4

The first all-electric BMW i4 offers outstanding dynamics, a high level of comfort and premium quality. This model is equipped with the fifth-generation BMW eDrive technology and characterized by pronounced sports performance. Thanks to the interplay of the efficient powertrain concept, lightweight construction, aerodynamic design and high-capacity high-voltage battery, the BMW i4 has a range of 406 to 589 km according to the WLTP standard (depending on model version and equipment) and is the perfect choice for any journey.

BMW I5

The most popular business sedan in the world, the BMW 5 Series, in its eighth generation comes for the first time in a fully electric version. Recognized for its elegant design and powerful performance, this model combines innovative technology, powerful features and impeccable sophistication. Intelligent Operating System 8.5 provides a completely new experience in using the car. The range of the electric BMW 5 Series ranges from 477 km to 582 km according to the WLTP standard (depending on the version and equipment of the model).

BMW I7

The fully electric BMW i7 brings ultimate luxury tailored to the highest BMW standards in combination with top performance. This model combines electric performance and multisensory entertainment to produce an unforgettable driving experience. The luxurious salon atmosphere in the interior with the individual My Modes system is complemented by the possibility of activating personal cinema in the back of the cabin, which brings an impressive experience on a 31.3-inch screen in 8k resolution. The BMW i7 provides a range of 595 to 625 km according to the WLTP standard (depending on the equipment version of the model).

NOVI SAD STEPS INTO THE WORLD OF ELECTROMOBILITY

Regarding recent investments in innovation and infrastructure, Novi Sad was one of the most engaged cities in the country. The flat terrain that the city rests on has been successfully used for the development and expansion of bicycle paths, and recently, the city held a competition for the distribution of subsidies for cyclists, thanks to which there will be fewer traffic jams, plus boosts what is the healthiest and cleanest transport for people and the environment. Recently, a so-called turbo roundabout was commissioned, whereby drivers choose their direction before entering the roundabout, which should

According to data for April 2023 (internal statistics of energy consumption and purchase prices), the cost per kilometer for diesel buses is 65 RSD/km, for CNG buses 46 RSD/km, while for electric buses it is 20 RSD/km

Photographs: *JGSP Novi Sad*

Solaris has been repeatedly awarded for quality and innovation in Poland. At the same time, in other countries, Solaris Urbino 12 electric buses, which are now part of the JGSP Novi Sad fleet, won the prestigious 2017 European Bus of the Year award

APOLONIJA HOLO, head of the Investment Maintenance Department in JGSP Novi Sad, graduated from the Faculty of Technical Sciences in Novi Sad and has been working for JGSP since 2000. In her twenty-year-long career, she worked and continues to work on bus maintenance in the workshop and is familiar with every bus maintenance process at JGSP Novi Sad. Since she started working for JGSP, she held every single position in the workshop—from workshop engineer through independent engineer to all management positions in the workshop. She was also part of the team that won JGSP Novi Sad the title of Ambassador of Alternative Fuels in 2016. Ms Holo participated in procuring the first bus powered by compressed natural gas in 2005. She was also a member of the team that constructed a filling station for compressed natural gas in 2011, participated in the procurement of six Solaris and five Citelis buses powered by compressed natural gas in 2011 and 2012, as well as in the procurement of 43 Mercedes and 49 BMC vehicles powered by compressed natural gas. In 2021, Ms Holo was the president of the commission for the procurement of 10 electric buses and chargers.

further expedite the traffic at that section. Apart from these innovations in infrastructure and traffic, starting this summer, ten new electric buses are now cruising the city, all part of the fleet owned by the Novi Sad Public City Transport Company (JGSP Novi Sad). We spoke with Apolonija Holo, Head of the Investment Maintenance Department at JGSP Novi Sad, about new buses, the company's plans and the advantages of electric vehicles.

Q. When and how did the idea to include electric buses in public city transport develop? Have these buses replaced the oldest models that have served their time on the roads?

A. Our company's engineers closely follow the development of the bus industry and new technologies and analyze the current market, so every new addition to the JGSP Novi Sad's fleet follows technological achievements that ensure a higher level of safety, affordability, comfort and environmental protection. In recent years, our fleet received a hundred new CNG-powered buses, which will be discussed later. This decision is a substantial step forward.

Investing is part of Novi Sad's larger involvement in the European Bank for Reconstruction and Development (EBRD) programme—Green Cities—which provides support to cities that want to invest in green and sustainable infrastructure, thereby solving key environmental challenges. With its Green Cities programme, the EBRD had already helped Novi Sad's public transport to have 29 new buses as part of the ongoing fleet renewal program, when 100 new CNG-powered vehicles were purchased. This type of bus significantly reduces emissions of polluting gases, and they were purchased in 2020 and 2021.

The Novi Sad government signed a document with the European Bank for Reconstruction and Development (EBRD) in June 2020, stipulating its intentions and ambitions for purchasing electric buses. A year later, after being granted a loan with favourable terms and conditions, the procurement ensued.

The company strives to continuously renew its vehicle fleet so that a

certain number of old buses are written off by purchasing new vehicles as needed.

Q. Could you tell us more about the performance of these buses? Which exact models did you buy, and which countries did you import them from?

A. After the public procurement was completed, we decided to go for Solaris from Poland, a company whose buses are used for public transport throughout Europe. Solaris has been repeatedly awarded for quality and innovation in Poland, as well as in other countries. At the same time, Solaris Urbino 12 electric buses, which are now part of the JGSP Novi Sad fleet, won the prestigious 2017 European Bus of the Year award.

These are low-floor, twelve-meter-long buses that can take up to 80 passengers plus the driver. In addition to the equipment that is generally standard in our vehicles (built-in air conditioning, platform for disabled passengers, cameras and video surveillance), the new buses have modern Mirror Eye mirrors. It is a set of cameras that replace conventional mirrors and show the driver the area immediately around the bus, significantly increasing traffic safety. Furthermore, they are equipped with Mobileye Shield+, a solution designed to avoid traffic accidents making driving safer. Thanks to this system that notifies the driver with sound and visual signals where pedestrians and cyclists are and how far the bus is from nearby vehicles, the problem of blind spots is solved. The buses also have a fire extinguishing system and an alcohol testing device—the vehicle's immobilizer.

Q. How many vehicles does JGSP Novi Sad have in total? What are immediate and not-so-immediate plans regarding this type of electromobility?

A. The JGSP Novi Sad fleet currently has 276 vehicles. According to most research and the regulation being adopted worldwide, electromobility is currently apostrophized as the future of traffic. Following our capabilities and needs, we will adapt to sustainable and economical transportation trends.

Q. Could you compare the financial advantages and disadvantages of conventional buses and new electric ones?

A. Electric buses are more expensive to operate, but only in the beginning. However, the affordability goes in their favor from the moment they start using them. According to data for April 2023 (internal statistics of energy consumption and purchase prices), the cost per kilometer for diesel buses is 65 RSD/km, for CNG buses 46 RSD/km, while for electric buses it is 20 RSD/km. Furthermore, we all know that city traffic is one of the major sources of pollution and we are aware of that part of our responsibility, as companies whose vehicles travel millions of kilometers annually. By investing in a sustainable form of mobility, we will contribute to improving the quality of the environment.

Q. How many bus lines use electric buses currently, and how did you decide on them?

A. We decided to use the new electric buses on four lines in the early days, considering they cover almost the entire city. There is a high traffic frequency regarding city lines, and departures are frequent, so by including eco-buses on those routes, we will reduce the participation of public transport vehicles in environmental pollution. We use electric buses on lines 2, 9, 11a and 11b.

Q. Do you know how satisfied citizens and drivers are with new buses? Are they used to this project now?

A. As far as we know, the first impressions of drivers and citizens are excellent. We are glad that our expectations were met since we chose buses that are fully adapted to the needs of passengers. They could notice the difference very quickly compared to other buses, primarily due to engines that are much more silent and have lower vibrations. The vehicle's features also provided a better working environment for drivers as driving is now easier. Some of them told us that sometimes they finish their shift, and it feels like they didn't even work. Driver assistance systems and autonomous solutions increase safety in public city transport. At the same time, zero emission of harmful gases affects the air quality in the city and, therefore, a more pleasant stay and life in Novi Sad.

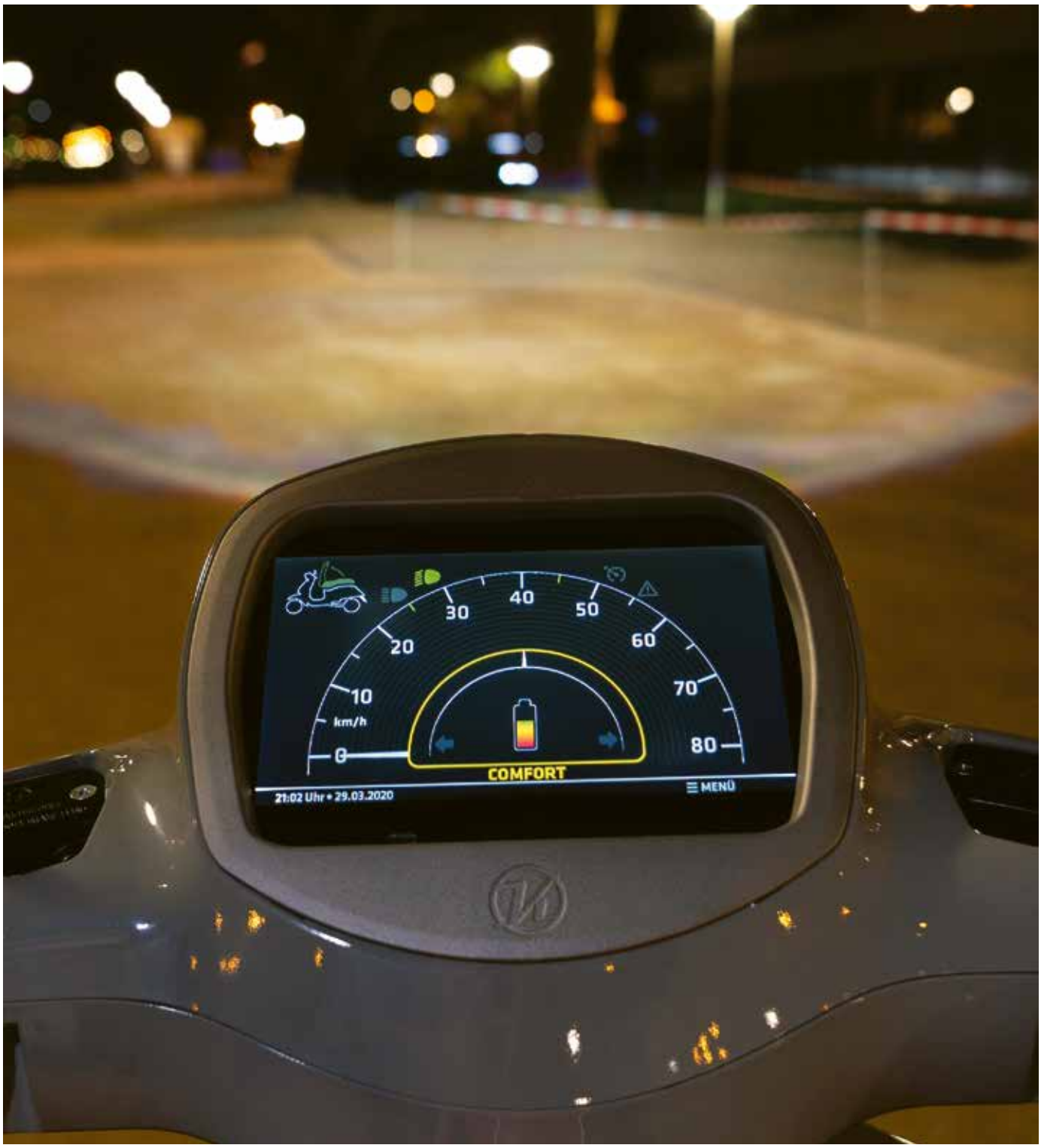
Q. What is the situation with electric chargers like? Do they perform well, and where are they located?

A. One charger is installed at the Jovan Dučić Boulevard/Veternik turnpike in the direction of Novi Sad for charging electric buses on lines 2, 8 and 9. Two chargers are located on the road near the railway station and are used for charging buses on lines 11A and 11B. The chargers are Siemens Sicharge UC600, and the charger power is 600 kW.

Five service chargers with two charging ports each, with a minimum power of 50 kW, produced by Kostad-Siemens Group, have been installed in the company, and they are used for service charging and periodic balancing of batteries. The batteries in the buses are fast-charging batteries produced by Solaris, with a 91.2 kWh capacity. The roofs have a pantograph produced by the German company Schunk, used for fast charging of batteries on turnstiles in the city.

The estimated mileage until the next charge and under normal weather conditions is 45 kilometers, at least 26 km under extreme summer and winter conditions.

Interviewed by: Milica Vučković



HOW TO DEVELOP ELECTROMOBILITY FASTER

Photograph: Unsplash/Kumpan electric

Serbia promptly started the installation of public charging stations on its motorways as part of its commitment and strategic determination on the road to EU membership

Numerous factors influence the importance and representation of electric vehicles at the local and state level. In the first place, global trends are important, or let's colloquially call it fashion. This has been dominant in the past, for instance, in the development strategies of smart technological solutions, i.e. smart mobile phones. Thus, due to a wrong assessment and a strategic decision not to implement touch screens, the Finnish Nokia, once the world's leading mobile phone manufacturer, disappeared from the global market. But fashion is dominant even today in the sustainable short-range urban individual mobility segment, the so-called micro-mobility. No one could have guessed that electric scooters would flood cities worldwide in the number they have, except perhaps their manufacturers.

The reason for this growth is primarily due to their affordable price. However, the possibility of their unhindered use in cities was also affected by affirmative measures to increase the accessibility of city facilities, primarily intended for citizens with reduced mobility (disabled, elderly, mothers with prams), considering that these are transport means which with their 50 plus kilograms are not at all easy to carry in the hands upstairs and the like.

On the other hand, we have the measures of the so-called traffic calming through the redistribution of street space from passenger cars to different modes of movement, reducing their speed and relegating their dominant role in local environments to increase the safety of children, pedestrians, cyclists, and other vulnerable categories of road users in cities.

At the time of their expansion, the unpreparedness of all relevant state administration bodies and local governments in cities worldwide was evident because the regulations and rules necessary for their safe use were not in place. Evidence that this development has surprised state administration and local government bodies worldwide comes from the heterogeneity in their approach to solving this pressing problem. While some completely prohibit their use, others wander around looking for ways to integrate them with other forms of movement in cities safely. Therefore, to increase the representation and more significant role of electric vehicles, they must become modern transport means of the future in users' minds, as opposed to outdated conventional passenger cars.

As an excellent example from the previous successful practices in cities and countries that have advanced far in the use of electric vehicles, below are recommendations on how to be successful in implementing this relatively new environmental concept, for which several key factors are crucial, plus the challenges and various obstacles that are still not overcome.

PROFESSOR VLADIMIR MOMČILOVIĆ, PhD, was born in Belgrade on July 2nd, 1970. He is fluent in English, French and Spanish. He graduated with his master's and doctorate degrees at Belgrade's Faculty of Transport and Traffic Engineering, the Road and City Traffic Department. Since April 1st, 1996, he has been employed at the University of Belgrade's Faculty of Transport and Traffic Engineering, where in 2018, he was appointed an associate professor at the Department of Technical Exploitation of Road Transport Means and Terminals in Road Traffic and Transport. PhD Momčilović lectures on the following subjects – Operational and Technical Properties of Motor Vehicles, Technical Logistics of Road Vehicles, Energy Efficiency of Motor Pool and Transport Means and Their Maintenance at graduate studies, Technical Logistics of Motor Pool and Research Methods and Measurements in Transport at master's studies and Operational and Maintenance Informatization of Transport Means at doctoral studies.

Public procurement of all government vehicles, especially utility vehicles, must be green

Photograph: courtesy of Vladimir Momčilović

Factors, challenges and obstacles

The first factor is the clear and unequivocal determination of state administration and local governments for electric, i.e. environmentally friendly and sustainable operation of means of transport in road and city traffic. For example, when purchasing new buses for public city and suburban transport or new vehicles for rubbish collection, the decisive (dominant) criteria should be the environmental one (quieter operation and so-called zero emissions) instead of the economic one (lower price). It is manifested through continuously transparently applying green or environmentally friendly procurement criteria for all utility vehicles. In this case, the priority must be the general public interest and the well-being of the population, i.e. the purchase of exclusively electric and/or other fully environmentally friendly vehicles as opposed to the purchase of a larger number of cheaper, environmentally unacceptable vehicles. Public procurement of all government vehicles, especially utility vehicles, must be green.

Visibility is another factor. All electric vehicles should be clearly marked with the message that the state and local government bodies care for the population's health and quality of life. It is not only marketing but also the promotion of this determination, which in the long run, raises the population's awareness about the importance of purchasing exclusively environmentally friendly vehicles (for their individual use). When the population's awareness matures, every individual will be ashamed to irresponsibly buy a passenger vehicle that is not environmentally friendly and powered by conventional fossil fuels, which, although cheaper, are still dangerous to health and harmful to the environment. Therefore, if something is demanded from the population, at least as much must be given to them.

The third indispensable success factor is comprehensive support. There are two segments here – the first is affordable and sufficiently widespread top-quality infrastructure for the electricity supply, i.e. chargers for electric vehicles and the other is state subsidies for the purchase of environmentally friendly vehicles.

Serbia promptly started the installation of public charging stations on its motorways as part of its commitment and strategic determination on the road to EU membership. However, motorway support is not enough. An extensive network of fast and semi-fast chargers with sufficient power, to begin with, must be established near tourist destinations, cultural & historical sites, and sports & recreational facilities until it is so widespread that it is available in every populated place with a certain number of inhabitants.

A measure stipulating one charging place for every 10,000 inhabitants could be adopted. This would mean that to start with, Serbia will have to have 600 semi-fast and fast chargers in public parking lots in attractive locations. Support can also come from the private sector, especially since this is a commercial activity, where competition and the creation of the infrastructure for the electricity supply with a higher capacity, shorter charging time and the like must be ensured. In addition, the management of the charger system and efficient charging for the energy used.

> All electric vehicles should be clearly marked with the message that the state and local government bodies care for the population's health and quality of life

There is an ongoing problem both here and abroad with the capacity of

Photograph: Unsplash/Erik Mclean

the power system for a complete transition to electric drive vehicles, but also with the imperative of obtaining environmentally clean electricity from renewable sources, which is an issue that many countries have been actively dealing with for the past few years. There are also a certain number of current problems in our system, such as the impossibility of billing for consumed electricity (which, according to the regulation, can only be done by a person authorized to distribute electricity), which forces current providers to charge for this service in line with the duration of the charger's use, i.e. parking, using applications that only support payment cards of Serbian banks which prevents foreign users from using the charger, billing via a mobile phone operator which requires that you have the Serbian phone number and others.

To avoid demotivation, electric vehicle users should be given the most flexible and universal payment method, analogous to the current functioning of fuel supply stations. However, this part will certainly develop spontaneously under the developing market demand and improve at the request of users, so it is still not realistic to expect that to happen until there is a greater share of electric vehicles in the overall number of vehicles in Serbia.

Vehicle subsidies and the development of the charger network

Concerning the issue of increasing the number of electric vehicles, the state has provided the required subsidies on the purchase price of electric vehicles and tax breaks on their use. Other countries have had serious doubts about the fairness of such subsidies. Bearing in mind the very high purchase price of electric passenger vehicles, even in much more developed societies, they are still available only to the upper classes of society, so such allocations are considered socially unfair if other members of society are not provided with an equal or similar subsidy system.

As an epilogue, my recommendation would be that to improve the situation with electromobility in the coming period, Serbia should do more to enable the required network of public chargers in smaller areas, especially outside the big cities, as well as to prescribe the framework and enable vehicles to use electricity supply. The second segment is the implementation of mandatory criteria for the green procurement of vehicles in all state administration and local government bodies and, thus, higher visibility of these vehicles, which will directly raise the population's awareness, especially in cities which have already become aware of their vulnerability to air and noise pollution.

Photograph: Unsplash/Andrew Roberts

CHARGE&GO CONTINUES TO BUILD A NETWORK OF CHARGER

Driving an electric car is becoming an increasingly popular choice, especially among people living in cities. However, electric vehicles require a good network of chargers for longer journeys so drivers can prepare and organize their journeys in advance. If there is a widespread charging infrastructure strategically located along highways and in cities—EV drivers will have less trouble.

In Serbia, a country that is increasingly following the development of green technology and renewable energy sources, there was a growth in tourism at the beginning of the summer. According to the latest data from the Statistical Office of the Republic of Serbia, in June, there was an increase in the number of tourists by 4.7 per cent compared to the same month of the previous year. Also, in the first five months of the current year, 1.4 million foreigners visited the country, representing an increase of 16.5 per cent compared to the same period in 2022. There is

Electric vehicles require a good network of chargers for longer journeys so drivers can prepare and organize their journeys in advance

Photographs: charge&GO

The company Charge&GO, dedicated to the vision of sustainable transport, is again expanding its network of chargers. A 240 kW electric charger is installed at the OMV—Metro filling station in Zemun

certainly a certain number of e-car drivers among the tourists, further emphasizing the need to develop good infrastructure. They need to be instilled with enough confidence that they can easily fill up their vehicles in any part of Serbia. Therefore, we see the indirect importance that a good network of chargers can have in areas that we might not initially think of, such as, in this case, tourism.

The company Charge&GO, dedicated to the vision of sustainable transport, continues to expand its network of chargers. A 240 kW electric charger is installed at the OMV—Metro filling station in Zemun. This charger, which was produced by Siemens, will be able to connect two electric vehicles that need fast charging simultaneously because it has two CCS sockets. If a certain premium model of an electric car, such as the Porsche Taycan, is connected to the charger of this power, charging at full power, within half an hour to an hour, the car will have a range of over 800 kilometers, which is an extraordinary calculation. The infrastructure is already in place, the charger is ready to use and will be online in a few days.

Charge&GO continuously works on its mission, and among the last projects was the installation of chargers at the OMV filling station in Borska Street in Banjica. Its power is 120 kW, and it is also a Siemens model with two CCS connections. On the other hand, the company is waiting for the EPS's approval to put the installed ABB charger into operation, with a power of 50 kW, within the OMV filling station on Ada Ciganlija. In this case, it will be possible to charge vehicles with European and Japanese connectors quickly. Apart from the chargers located on the territory of Belgrade, a 120 kW charger, a model produced by Siemens and which will soon be put into operation, is installed at the OMV filling station in Zaječar.

With the help of the first digital platform, finding available chargers and organizing trips certainly become simpler. Charge&GO enabled drivers to make a payment in one place, in addition to viewing the charger map. Users also have electric chargers available across the continent, given the partner network they are part of. After registration with the application, certain benefits can be obtained.

With electric cars and the infrastructure being developed by the company, drivers could reduce their expenses without sacrificing vehicle performance. Electromobility is an important topic for ecology, tourism, and traffic, as well as for individuals and countries. Expanding the network is an opportunity to participate in creating a world where roads are not only a means of connecting places but also the people, ideas and values that shape our future. Charge&GO can be proud of its contribution to this dynamic time of change and everything it does to make traveling by electric vehicles economical and tireless.

Prepared by: Milica Vučković

HOW TO PROPERLY MANAGE ENERGY CONSUMPTION

The fifteenth consecutive international conference IEEE PES PowerTech Belgrade 2023, held in Belgrade in late June, gathered around 600 participants—academic lecturers, well-known researchers in the field of power engineering, managers, and leaders of research activities in corporations, professors and young people and students from close to 50 countries. This was the largest conference organized in the last 30 years by the Power & Energy Society, the power engineering section of the American Association of Electrical and Electronics Engineering (IEEE) outside the United States, in cooperation with local organizers, which this year took place in cooperation with the Faculty of Electrical Engineering in Belgrade. IEEE PES PowerTech is considered one of the most important global meetings in Europe's energy segment. IEEE PES PowerTech Belgrade 2023 is the largest and most significant international power engineering conference ever held in the territory of the former Yugoslavia. The main topics of the conference included power supply security, changes in the power system caused by the increased connection of renewable energy sources (RES) to power grids, the need to boost the system's resistance to major climate changes, the transition to a power system that will not emit harmful greenhouse gases, the integration of electric cars and the management of

energy consumption, that is, how to get small and large consumers to plan their consumption with the view of reducing energy use. Over 400 scientific and professional papers were presented at the conference.

In an interview for our magazine, Professor Jovica Milanović, Dean of the Department of Electrical Engineering and Electronics at the University of Manchester in Great Britain, foreign member of the Serbian Academy of Engineering Sciences and honorary co-chairman of the conference, pointed out that the greatest benefit of the meeting in Belgrade for our country was that Europe and the world could see that Belgrade is still mindful of power engineering and that the results accomplished by our teachers, researchers, engineers and students in this field deserve in every way the greater involvement of our universities and research institutions in international research and projects funded by EU and other international organizations.

Q. How would you rate the conference?

A. This kind of conference has never been held on the ex-Yugoslavia territory, neither in size nor importance. It is one of the most important professional meetings in the field of energy in the world, which is not industrially oriented. My foreign colleagues and I were surprised by the quality of the participants. PES has around 40,000 members worldwide. The highest global professional recognition in electrical engineering and electronics is to be a Fellow IEEE, roughly translated as a regular member of the IEEE. Fellow IEEE comprise 0.1 per cent of

Photographs: PowerTech Belgrade 2023

The symbiosis between social sciences and power system planning is becoming much more important now than in the past when power system planning was central and large power plants and a suitable transmission system were built to supply consumers

JOVICA MILANOVIĆ is the Electrical Engineering Professor and Dean of the Department of Electrical Engineering and Electronics at the University of Manchester in Great Britain, a Visiting Professor at the Faculty of Electrical Engineering in Belgrade and the Faculty of Technical Sciences in Novi Sad and an Honorary Professor at Queensland University of Technology in Australia. Professor Milanović is also a regular member of the American Society for Electrical and Electronic Engineering (Fellow IEEE) and the British Institution of Engineering and Technology (Fellow IET), a foreign member of the Serbian Academy of Engineering Sciences and the editor-in-chief of the scientific journal IEEE Transactions on Power Systems.

the total number of IEEE members. At this conference, out of the total number of participants (about 600), there were more than 26 researchers with the Fellow IEEE title, which is more than four per cent, that is, 40 times more top experts compared to the number of conference participants, than there are in the entire association. It is an unusually large number of experts gathered in one place.

Q. How can consumers adjust their energy consumption?

A. If we could reduce the consumption of electricity and reach an agreement with the consumers that they should not turn on the devices at the same time during the day but that different groups of consumers do so at different times during the day and night, then there would be no need, to put it simply, for all fossil fuel power plants work at the same time, which, in turn, would reduce the emission of harmful gases. Great research is being done in the world and our country on optimally coordinating and motivating consumers to help reduce greenhouse gas emissions by adjusting their consumption to periods of the day when there are the best conditions for energy to be produced from renewable sources.

If during the day, for example, the sun is shining, or the wind is blowing and have a lot of solar power plants and wind power plants, the produced electricity does not contribute to environmental pollution, and if at that moment, people turn on their electrical devices to use the produced energy, this energy will not be dispersed. But, if we don't have such power plants, but rather fossil fuel ones, which pollute the environment much more, reducing consumption would require less electricity production and thus a reduction in the emission of harmful greenhouse gases from these power plants.

Q. What to do with energy when there is no consumption?

A. In addition to producing energy from the sun and wind, at the conference, we also discussed what to do with energy if there is no consumption. If we generate electricity using solar plants or wind farms when there is enough sun and wind and all consumers turn on electrical appliances when this energy is available, it will be largely consumed. The rest of the available energy will be lost if we cannot store it. To prevent this from happening, we need to build and optimally distribute a sufficient number of energy storages (accumulation sources), i.e. batteries and/or storage lakes for hydroelectric power plants, so that on the one hand, these energy storages can be filled when there is an excess of energy produced by RES and

that this stored energy, on the other hand, could be used instead of the one produced from conventional power plants that pollute the environment more, when there is no production of energy from RES. The coordination of production and consumption was one of the main topics of discussion related to the management of consumption and energy storage. The other topic was how to make batteries efficient and large enough and where to place them so that this renewable energy is stored and then returned to the system when there is enough of it.

Q. What is the future of power grids?

A. Depending on how far ahead we are talking about, the future is such that there will be no or fewer large power plants. Still, electricity will be produced by rooftop solar panels, smaller wind farms and individual producers scattered across the country in various locations. For example, if thermo-power plant Nikola Tesla A and B (TENT) in Obrenovac produces about 35 per cent of Serbia's total electricity and all that produced energy must be distributed across the country via hubs to supply consumers, we have power lines for that. Let's imagine for a moment that we do not have such large, concentrated producers, e.g. TENT, and that all big cities have parking lots covered with solar panels, all buildings and all individual houses have rooftop solar panels and appropriate batteries to store the excess energy produced. We have a situation where we don't have TENT or similar producers in different locations but rather small producers who are scattered throughout the country. In that case, the existing transmission lines will not be as useful as they are now, but we will need others with probably smaller transmission capacities.

From a local point of view, if in one part of the city, everyone installs air conditioners and everyone starts using electricity for heating and has electric cars, the existing distribution network in that part of the city will no longer be adequate. It would be necessary to invest in another, modified and more flexible distribution grid that will largely be self-sufficient (meaning, all these consumers can be supplied from local sources in case they also have solar panels and energy storage) and that, if necessary, they can also receive electricity from more distant energy sources. So, when we plan in which places to improve the grid in the next five to ten years, and this is something that must be done in advance, we need to know the location of increased consumption and in which location someone will eventually apply for a permit and install a power plant or a large number of individual solar panels. It is a very complicated problem because it depends to a large extent on socio-economic conditions and the attitudes of individuals regarding environmental protection.

Some consumers would decide to install and use RES to reduce consumption and save money or, for the same reason, agree to have their consumption managed (directly or indirectly). Some would see the installation of solar panels as a potential source of income, others would agree to management consumption for the benefit of humanity, i.e., preserving the environment, and for some, potentially reduced prices per kilowatt-hour would not mean much. They may be completely uninterested in managed consumption, which could impair their comfort. In any case, we cannot create a system (technically and economically) where the end user will be dissatisfied. We need to create a system that will largely respect the wishes of all or the vast majority of consumers. The construction and implementation of such a system requires serious sociological research and has little to do with energy.

The symbiosis between social sciences and power system planning is becoming much more important now than in the past when power

15 BILLION EUROS HAS TO BE INVESTED IN ENERGY

"We need to invest approximately 15 billion euros in the Serbian energy sector in the next 10 years", said Dubravka Đedović, Minister of Mining and Energy of Serbia, at the opening of the PowerTech 2023 conference. The roadmap for development and investments is provided by the Energy Infrastructure Development Plan and energy efficiency measures for the period until 2028, with projections until 2030, which the Serbian government adopted.

system planning was central and large power plants and a suitable transmission system were built to supply consumers. In any case, these changes will not and cannot happen overnight. Still, creating the appropriate political, social, and economic conditions to implement such a system takes years. Changes are now taking place faster compared to previous periods, but they will still be gradual and not sudden.

Q. Within what time frame can Serbia systemically switch to renewable energy sources?

A. The transition from the system we are in now to the one in which we should, or probably will be, should be evolutionary and gradual. We cannot switch to RES overnight because the existing infrastructure cannot be modified quickly. RES should be used cautiously and gradually, with detailed technical & economic studies showing where to install them and which locations are climatically favorable. Another thing that is mentioned more often is small, modular nuclear power plants. They can produce the largest quantity of energy from the smallest space, and their production does not depend on weather/climate conditions. In many countries, it is already or is becoming politically acceptable to mention nuclear energy, which was not the case ten years ago, as one of the types of energy in the country's energy portfolio. This is no longer a taboo topic because people realized during the energy crisis that no form of energy can and should be written off.

Nuclear power plants whose production does not depend on weather and climate conditions are more reliable as an energy source, on the one hand. They do not pollute the human environment like fossil fuel power plants. Still, on the other hand, not all countries have the opportunity to build wind, solar or hydropower plants, depending on the climatic area in which they occupy. I would say that nuclear energy will continue to be necessary for a transitional period of several tens of years. It will probably be used differently in building smaller, modular plants instead of the big nuclear plants we've had so far, but I don't think we'll be able to avoid that. In saying this, I don't mean Serbia, but globally. Most countries, including Serbia, have excellent expert teams who can, alone or in cooperation with foreign partners, draft an appropriate energy development plan adapted to local conditions.

Q. What are the latest trends in electrical engineering and electronics? What are the relevant priorities in the coming period?

A. It is difficult to choose one area as a priority. Some of the areas that attract the most attention of the international research and engineering world are power system planning, the development of technologies for storage, returning the energy stored to the power system and finding new storage ways. Recently, hydrogen has been often mentioned as one of the main alternatives for storing large quantities of energy. Batteries as energy storage are good for powering small consumers, but a battery cannot power large industrial and commercial consumers for long. One of the important trends is the way we do consumption management and to what extent it is possible to manage energy consumption (from a social and technical aspect) to help the system not produce energy from non-renewable energy sources when that is not necessary. Consumption management, especially by a large number of small, geographically scattered consumers, is a big problem, and there is a need for both technical (including automatic management methods) and socio-economic research.

The third or fourth area I would single out is the system management and operation (including stability and resistance to major climate changes), with many production and consumption capacities connected to the transmission and distribution grid via electrical energy converters. Until about twenty years ago, we had almost exclusively conventional synchronous generators in the system. Now, we have solar and wind power plants, which are completely different technologies. These new technologies are scattered throughout the system, and all are almost exclusively connected to the system via power electronics (electro-energy converter). Many consumers, as well as electrical energy storage devices, are connected in the same way. The behavior of such a system in both stationary and transient (dynamic) modes is different and requires detailed studies and new automatic control methods. In addition to knowledge of classical energy, knowledge of power electronics and automatic control is required for the system to perform reliably and stably.

The next IEEE PES PowerTech conference will be held in June 2025 in Kiel, Germany.

Interviewed by: Mirjana Vujadinović Tomevski

SOLAR ENERGY —SECURE SUPPLY

The adoption of the Law on Renewable Energy Sources and the energy crisis in which we found ourselves encouraged both citizens and industry to ensure a safe and stable supply by installing solar power plants

Serbia, like the whole of Europe, is working intensively to become energy independent and wants to achieve this with the help of renewable energy sources (RES). To meet the set goals, it is necessary to increase the share of RES to about 40 per cent in the overall energy consumption by 2030. For these reasons, the state passed the Law on the Use of RES in 2021, which was revised this year.

Serbia's solar potential is greater than Northern Europe's, which means that if we consider Germany, the leader in producing electricity from photovoltaic systems, our country has 30-40 per cent more solar potential.

The adoption of the Law on the Use of Renewable Energy Sources and the energy crisis in which we found ourselves encouraged citizens and industry to ensure a safe and stable supply by installing solar power plants. As in any business, trusted partners with many years of experience are key to a safe and successful business.

MT-KOMEX, which celebrates 30 years of business this year, is a pioneer in constructing solar power plants in Serbia. Over many years of work, they have built and delivered equipment for more than 180 solar power plants on the ground and on roofs, with a total installed power of more than 60 MW.

The hard workers of this company, 130 engineers and installers, oversee introducing new areas of business on the domestic market, and the company's employees regularly attend specially prepared trainings and have all the necessary certificates.

The quality and dedication of the company are best evidenced by the fact that during the unprecedented storm that hit Serbia in July, not a single solar power plant built by MT-KOMEX was damaged.

The company's leaders saw that they could help develop projects in the field of renewable energy sources in Bosnia and Herzegovina, which is why, in April of this year, the decision was made to open the company MT-KOMEX BiH.

The company's professional team is ready to always provide clients with full support in all project phases, from the development stage to the preparation of documentation for technical acceptance and obtaining a use permit, on a turnkey basis.

Prepared by: Milica Radičević

Photograph: MT-Komex

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SLOVENIA'S COMPREHENSIVE APPROACH TO FACILITATING THE GROWTH OF ELECTROMOBILITY

Size-wise, Slovenia is one of the smaller countries in Europe whose territory is more than half covered by forests, is recognizable by its beautiful landscapes and is often known as a country that takes care of and protects its natural wealth. Following the steps toward sustainable development, starting in 2011, this country classified electromobility as an important topic for preserving a healthy environment when it subsidized the purchase of the first three electric cars in the country. We spoke with Marija Lesjak, Secretary of the Directorate for Transport Policy at the Ministry of Environment, Climate and Energy (MOPE), about the development of electromobility and incentives for citizens to switch to alternative fuel vehicles.

By 2018, the purchase of 1,521 electric vehicles was gradually co-financed. In October 2017, the Slovenian government adopted the Market Development Strategy for setting up an appropriate transport infrastructure related to alternative fuels. Article 3 of Directive 2014/94/EU of the European Parliament and of the Council on the establishment of infrastructure for alternative fuels was hereby incorporated into the Slovenian legal system, which requires EU Member States to adopt national policy frameworks for market development, concerning

Photographs: Ministry of Environment, Climate and Energy (MOPE)

alternative fuels in the transport sector and set up an appropriate infrastructure.

This strategy was a national framework for reducing greenhouse gases, especially CO_2 emissions in the transport sector, by 2030, so the goal was to have at least 200,000 electric vehicles by that time. The strategy also includes a certain number of other alternative fuel vehicles. Speaking about the infrastructure for electric vehicles, the goal was to provide at least one charger for every 10 registered electric cars.

In 2019, the Slovenian government adopted the Action Programme for Alternative Fuels in Transport, which included various measures to improve the alternative fuel market and establish the appropriate infrastructure for alternative fuels. Since that year, the purchase of an average of 1,000 electric vehicles per year has been co-financed.

This strategy was a national framework for reducing greenhouse gases, especially CO_2 emissions in the transport sector, by 2030, so the goal was to have at least 200,000 electric vehicles by that time

"From 2011 to 2022, we co-financed the purchase of 5,687 electric vehicles. Since then, including 2019, subsidies for plug-in electric hybrids (PHEVs) and battery electric vehicles (BEVs) have been available. From 2020, subsidies are only available for BEVs. Subsidies for personal electric vehicles range from 4,500 to 6,500 euros per vehicle and 3,500 euros for light commercial vehicles," said Marija Lesjak.

Given that the adopted strategy from 2017 was not sufficient for the accomplishment of ambitious goals set by the European Union as part of the European Green Deal and the Fit for 55 set of regulations, on May 25, 2023, Slovenia adopted a new systemic law on infrastructure for alternative fuels and promoting the transition to alternative fuels in transport (ZIAG). This law creates a legal framework for establishing, developing, expanding, and safely using an interoperable and user-friendly infrastructure for

filling and supplying alternative fuels to road, air, and sea traffic and three types of energy sources – electricity, hydrogen, and natural gas.

The law also prescribes three basic levels of infrastructure development for alternative fuels. The first is strategic planning of the alternative fuel infrastructure, where, considering the current state and maturity of the existing technologies, the emphasis is on planning the infrastructure network for charging electricity for road vehicles. Then, there is the provision of a long-term dedicated resource for co-financing measures for switching to alternative fuels, which will contribute to accomplishing environmental and energy goals in the transport sector. The last level is forming an executive body to implement public tenders and calls for allocating dedicated funds for measures to accelerate the transition to alternative fuels in traffic, i.e. infrastructure and vehicles or a combination of both. Also, a centre is being established to promote the transition to alternative fuels.

Electrification of public passenger transport is also one of the goals of the new ZIAG. Speaking of which, urban and suburban public passenger transportation has the greatest potential for switching to electric vehicles. Intercity lines are currently not planned because they cover the greater mileage, that is, the inadequate power range of the available electric batteries.

LIGHT AND HEAVY-DUTY VEHICLES

The strategy is based on projections of growth in the number of vehicles using alternative fuels, especially electric vehicles in the segment of light-duty vehicles, i.e. passenger and light commercial vehicles. For heavy-duty vehicles, in the transition phase to low-emission and zero-emission mobility, natural gas, liquid and compressed, but also hydrogen and electricity to a lesser extent were taken into account.

Transport infrastructure for electric vehicles

Regarding the charging infrastructure, Slovenia currently has 50kW fast-charging chargers installed on the motorways and charging points at 26 locations at petrol stations along the motorways. The new law from 2023 foresees the installation of chargers for fast charging with a maximum power output of 3MW along the motorways at existing petrol stations.

For Slovenia to comply with European legislation, the Alternative Fuels Infrastructure Regulation required the establishment of toll parks for light and heavy-duty vehicles every 60km of Slovenian motorways, which are part of the TEN-T grid. The next step is to provide a power output of at least 400kW by 2025 and 600kW by 2027.

Heavy-duty vehicle charging parks will have a capacity 1,400kW by 2025 and 2,800kW by 2030. This highly connected power is currently impossible to utilize due to inadequate locations. Therefore, improving the networks at certain petrol stations or establishing new places for charging electric vehicles is necessary.

"Considering the rapidly growing electromobility and the fact that we are a transit country, Slovenia has decided to form large charging parks with a total power output of 3MW and more near the transmission power grid. For these purposes, a new economic public service was launched, providing high connected power along the motorways and in city hubs," Ms Lesjak adds.

The plan is also to set standards for charging heavy vehicles with a power of 1MW, while now the maximum standard is 350kW.

> Electrification of public passenger transport is also one of the goals of the new systemic law

"So far, there are no harmonized standards for electrical charging stations in the European Union, except for standards related to electrical engineering, which refer to individual electrical components. Introducing e-mobility in the heavy-duty segment will require not only vehicles and charging infrastructure but also adjustments in logistics due to the operational characteristics of e-vehicles. Furthermore, we expect that there will be a big development in billing services, where different business models will be established," Ms Lesjak explains.

Incentives for individuals and subsidies

Until now, purchase subsidies have been the key mechanism for encouraging citizens to buy electric vehicles. With the adoption of the new systemic law, subsidies for electric chargers for home charging will also be granted.

"In 2023, subsidies for used electric vehicles have also become available. The share of the subsidy is allocated according to the value of the vehicle and means that for a new electric vehicle worth up to 35,000 euros (VAT included), the maximum subsidy is 6,500 euros and for new vehicles worth over 35,000 euros (VAT included) the maximum subsidy is 4,500 euros. This makes electric vehicles more accessible to citizens with lower incomes. Also, for used vehicles up to 30,000 euros (VAT included), there is an available subsidy of 3,000 euros. For used vehicles that cost over 30,000 euros, the subsidy amounts to 2,000 euros," Marija Lesjak says.

People are encouraged to use electromobility thanks to the formation of a widespread network of publicly available chargers. Some municipalities in Slovenia still offer free charging, as do certain store owners and large shopping centers, which allow customers to charge in parking lots in front of stores. A significant incentive for the purchase of electric vehicles is the possibility of having your own charger for people who live in houses, which is supported by the fact that there is a greater interest in switching to such vehicles among residents who do not live in residential buildings.

In Slovenia, private or publicly available charging infrastructure funds have not yet been allocated to companies except for municipalities. In the second half of this and next year, state aid programmes will be prepared for electric charging infrastructure and hydrogen supply for public and private locations.

Prepared by: Katarina Vuinac

ARTIFICIAL INTELLIGENCE IMPROVES THE EFFICIENCY OF ELECTRIC VEHICLES

Large foreign companies still lead the development of e-mobility in Serbia, and it is important to encourage the involvement of domestic companies and institutes

Artificial intelligence (AI) plays a significant role in e-mobility and sustainable transport globally, and Serbia is catching up with the world in this area. The application of AI in e-mobility and sustainable transport in our country can contribute to the optimization of traffic routes, better battery performance, development of autonomous driving, vehicle maintenance and efficient management of charging points. This technology yields numerous benefits, including reduced emissions, higher efficiency, and a better experience for electric vehicle users.

We spoke with Dragiša Mišković, PhD, research associate and Head of the Human Computer Interface research group at the Artificial Intelligence Institute of Serbia, about the extent and nature of using AI in e-mobility and sustainable transport in Serbia.

The vision of the Artificial Intelligence Institute of Serbia is to become a global centre of excellence in scientific research and technology transfer in the field of AI and machine learning, as well as to create innovative leaders in that domain. Artificial intelligence is the ability of a computer or computer-controlled robot to perform tasks normally associated with intelligent beings and refers to the simulation of human intelligence through machines programmed to think like humans and mimic their actions.

Q. How would you assess the development of e-mobility in our country?
A. Considering that e-mobility in Serbia is still developing, we face numerous challenges. Several key factors affect the e-mobility situation in Serbia, such as infrastructure for charging electric vehicles, incentives for their purchase, investments in research and development and providing support to startups and technology companies that deal with this segment.

We also need to educate and raise awareness about the advantages of electromobility and the environmental and economic advantages of electric vehicles. These challenges are also typical for many other countries in the development stage of e-mobility. Thanks to appropriate

Photograph: Pixabay/Gerd Altmann

Electromobility, a key sector of the economy and a source of development potential is gaining increasingly important in the modern world due to concern for the environment and health

DRAGIŠA MIŠKOVIĆ, PhD, graduated from the Faculty of Technical Sciences in Novi Sad and, in 2017, obtained the title of Doctor of Science in the field of telecommunications and signal processing. He participated in numerous national and European projects and published over 60 papers. As a research associate and Head of the Human Computer Interface group at the Artificial Intelligence Institute of Serbia, he works on projects related to the application of different modalities of interaction between humans and machines, multimodal perception, natural language processing and more.

infrastructure investments and incentives, Serbia has the potential to make progress in this area.

Q. What is Serbia's position in this segment compared to the countries in the region that are also EU members? Which countries are the most developed when it comes to e-mobility?

A. In terms of the development of e-mobility, Serbia is in a similar position as other countries in the region. Electromobility is a relatively new industry developing rapidly worldwide, including the Balkan region. The Balkan countries, including Serbia, face similar challenges and opportunities related to e-mobility.

We should bear in mind that the situation in this segment is changing rapidly, and each country in the region has its own specific challenges and development strategies. It is crucial that countries in the region cooperate and exchange knowledge and experiences to accelerate development and achieve a sustainable transformation of the transport sector. Norway, the Netherlands, China, Germany, and Sweden are the leaders in e-mobility, as they have advanced systems, infrastructure, and initiatives to support the use of electric vehicles.

Q. To what extent are AI-based tools for e-mobility being developed and applied in Serbia?

A. Artificial intelligence is playing an increasing role in e-mobility worldwide. It is used to optimize the per-

Photographs: (middle left and top right) courtesy of Dragan Mišković (bottom right) Pixabay/Markus Roider

formance of electric vehicles, improve autonomous driving systems, manage battery charging, predict energy consumption, optimize logistics and more.

Electromobility, a key sector of the economy and a source of development potential is gaining increasingly important in the modern world due to concern for the environment and health. Our wider regional community has an exceptional opportunity to become one of the leaders in Europe in this field, using the abundance of experience, tradition, and expertise we possess in these domains.

Large foreign companies still lead the development of e-mobility in Serbia, and it is important to encourage the involvement of domestic companies and institutes. We also need to carry out timely planning activities to develop the infrastructure for the fifth-generation network (5G) and systematically approach the drafting of regulations. The relevant laws will facilitate the widespread use of electric and autonomous vehicles.

Q. To what extent have the domestic economy and the automotive industry adapted to modern business models and expectations based on the application of artificial intelligence?

A. The economy and the automotive industry are increasingly recognizing the importance and potential of artificial intelligence in adapting to new business models and harmonizing market expectations. AI is used to automate production processes in the automotive industry. Robotics and AI can improve manufacturing efficiency and accuracy, reduce errors, and increase productivity. Furthermore, artificial intelligence plays a key role

Photograph: Unsplash/Jenny Ueberberg

in the development of autonomous vehicles, as its algorithms, in combination with various sensors, are used to recognize and react to the environment, as well as to improve driving safety and more. Artificial intelligence is also used to analyze sensor data and monitor vehicle conditions, enabling predictive maintenance, analyzing large amounts of data in the supply chain, and predicting market needs.

Adapting to new business models and market expectations varies from company to company, industry to industry and region to region. However, an increasing number of companies in the automotive industry are recognizing the importance and benefits that AI can generate and are therefore increasing investments in research, development, and application of these technologies.

Q. What is your view of the modernization of the IT industry in Serbia and its contribution to the development of e-mobility?

A. The modernization of the IT industry in Serbia from the aspect of the development of e-mobility can be crucial for support and progress in this sector. To support electromobility, Serbia must have a modern technological infrastructure that includes developed networks and communication systems needed to connect electric vehicles and charging infrastructure, as well as security and control systems.

The IT industry also plays a key role in developing software solutions to support e-mobility. At the same time, large amounts of data generated in electromobility are used for analysis, prediction, and optimization. The application of AI in e-mobility also creates new opportunities for vehicle performance optimization, energy consumption prediction, charging management and other relevant aspects.

Support for research and development and cooperation between industry, academic institutions, and the state to create a strong innovation ecosystem in e-mobility is extremely important. The modernization of the IT industry should encourage such an ecosystem and support research, development, and application of new technologies in e-mobility.

Given the uncertainty of doing business during the energy crisis and inflation for automotive and other companies, AI's role and importance will become increasingly significant in developing electric, hybrid and autonomous vehicles that will rely more and more on technologies and the virtual world in the future.

Interviewed by: Mirjana Vujadinović Tomevski

> It is crucial that countries in the region cooperate and exchange knowledge and experiences to accelerate development and achieve a sustainable transformation of the transport sector

Photograph: Pixabay/(Joenomias) Menno de Jong

ENERGETIK ENERGIJA – RELIABLE PARTNER

Earning the position of the largest regional distributor of photovoltaic materials requires not only the availability of various products and services, but a sincere understanding of the customer needs resulting in their long-term loyalty. Energetik energija d.o.o. is a company that continuously reaffirms its market position through its business.

The availability of reliable and diverse inverters, photovoltaic modules and mounting systems is something that this company can readily offer to its customers. Still, the nuance that sets them apart from other distributors is being a true partner to their customers, satisfying their specific needs, including understanding the problems and challenges that their customers and installers face on a daily basis.

> A team of experienced professionals who have spent 20 years on rooftops and dealing with paperwork for solar installations plays the main role in the company's good practice

To be a successful distributor, it is essential to know what customers want, understand local regulations and be familiar with their preferences and traditions. What sets this company apart is providing assistance throughout the entire process, from initial project planning to problem-solving and beyond.

Respecting timeline is a very important aspect in this company's business, which is why they are doing their utmost to respond to their customers' enquiries as efficiently as possible, ensuring a response by the end of the day or, at the latest, by the next day. This dedication to excellent customer service is a fundamental part of our identity as a company. A team of experienced professionals

Photographs: Energetik energija

individual while being mindful of their local language, traditions, and challenges.

This connection between customers and the company's employees is essential because they aim to be a local and beloved company, embraced by the community in which they operate. Moreover, as the company grows, its focus on being even more rooted locally will remain strong. This is a fundamental aspect. So, in response to the question of what can clients expect from the company's all possible combinations available, types of systems: hybrid or AC connections, types of networks, three-phase or single-phase, product warranty in years and percentage of remaining capacity and all data on power and storage capacity. This tool is something that will spare so much time for its users in terms of making new combinations and doing research and with this knowledge, installer's answers to their customer's questions are going to be much more effective and trustworthy.

This connection between customers and the company's employees is essential because they aim to be a local and beloved company, embraced by the community in which they operate

who have spent 20 years on rooftops and dealing with paperwork for solar installations plays the main role in the company's good practice. The company offers personalized support in choosing the right products and solutions for their customers' needs, whether it's selecting storage options, charging stations, or heat pumps and solutions that take into account the specific needs of every team of experts, the company says that clients can find someone like them.

In order to bring their support even closer to clients, the company has released the 2023 STORAGE GUIDE as a theoretical introduction to this subject and went even further by offering the STORAGE MAP. This practical document contains datasheets of matching inverters and batteries,

The company's commitment to building strong relationships with its clients is best reflected in the way the company interacts with them. The company meets clients in person during educational events and by doing so, we ensure that their customers get to know them as individuals with principles and values they can trust. They had such an opportunity in Belgrade in June of this year and the next opportunity will present itself in November when they will again meet up at the Energy Fair in Belgrade.

Eager to create even more opportunities, the company creates favourable conditions for such new opportunities which is why they are currently working on the 2023 Energetik energija Roadshow. From Slovenia to Serbia touching Bosnia, Croatia and Macedonia too, the company will introduce to their guests technical competencies and news directly from the producers, as well as their own news such as their new website with a B2B purchase platform and webinar area.

Prepared by: Katarina Vuinac

ELECTROMOBILITY IN THE ABB WAY

ABB made a big change in 2017 when it presented a charger with 150 or 350kW power

Road traffic is one of the major polluters of the environment. According to research, about 60 per cent of polluting substances enter the air from exhaust pipes. To reduce air pollution, we need environmentally clean and acceptable means of transport. Electric vehicles are nothing new, and their number has been growing exponentially. People are also becoming increasingly aware of the advantages of these vehicles as they do not emit harmful gases and are cheaper to maintain compared to vehicles with internal combustion engines.

Since the electrification of traffic has been underway for years, almost all car manufacturers have said that in the near future, they will exclusively produce electric vehicles. Along with the development of electric cars, we also need to work on developing and improving chargers for these vehicles.

ABB is the global leader in the production of electric chargers, with the largest installed base of fast charging stations for electric vehicles worldwide.

ABB entered this production segment in 2010 when it presented its first TERA 50kW charger, and two years later, launched TERA 51 and TERA 53, both 50kW. The company's expert team is working hard on developing chargers for electric vehicles, so ABB made a big change in 2017 when it presented a charger with 150 or 350kW power, which is modular and expandable. It specifically means that adding one power supply

Photographs: ABB

cabinet increases the charger's power to 350kW.

Fastest charger in the world

Fast and easy car charging is one of the demands of electric vehicle owners. Thanks to Terra 360, ABB's fastest charger, it is possible to top up the battery to cover 100km with just three minutes of charging. This charger is designed to charge four cars simultaneously, which is a great advantage for both the charger's owner and the users. Its algorithm is such that if one car is charged, it can deliver a power of 360kW, which at the moment can only be received by premium cars. If two, three or four cars are being charged simultaneously, the charger automatically redirects the power to 180 or 90kW.

The innovative lighting system guides the user through the charging process. It displays the state of charge (SoC) of the electric vehicle's battery and the remaining time before the optimal charging session is completed.

The world's fastest electric vehicle charger is also disabled-friendly and features an ergonomic cable management system, helping drivers plug in quickly with minimal effort.

Formula E with ABB—more than a race

To the joy of Formula 1 fans, at least the part that is aware of how much this competition emits harmful gases, the ABB FIA Formula E was launched in 2014. The fan base of these interesting races, laps covered in an even shorter time, and new solutions implemented in this competition have been growing year-on-year.

Thanks to the innovative solutions provided by the ABB Company, electric formula vehicles are charged on specially designed DC fast chargers. For everything to function smoothly, a unique technology was designed that charges the car's battery in just a few seconds.

Since the Formula E competition occurs worldwide, the company has created mobile chargers that can easily adapt to different power sources, i.e., connected to the public power grid in India, a generator in Cape Town or battery systems in Berlin and Monaco. Mobile chargers for electric formula vehicles can simultaneously charge two cars and a completely empty battery in just 45 minutes.

The FIA World Championship is the only organization that is a certified competition with net zero carbon emissions. In cooperation with ABB, they are creating a platform for the new age of motor racing.

Prepared by: Milica Radičević

Thanks to Terra 360, ABB's fastest charger, it is possible to top up the battery to cover 100km with just three minutes of charging

NEWS FROM THE COUNTRY AND THE WORLD

HOW INNOVATION IN HEAT PUMPS CAN TRANSFORM HEATING AND COOLING

Heating and cooling accounts for about half of global energy consumption and is responsible for more than 40 per cent of energy-related carbon dioxide emissions.

Considering that only a third of people living in hot climates possess cooling appliances, the energy demand for heating and cooling is expected to surge, especially with global temperatures on the rise. This emphasises the urgent need to transform and decarbonise the sector.

Highly efficient electricity-driven heat pumps will be vital in this effort, especially for space and water heating in buildings where cooling is largely electrified

Heat pumps are devices that use electricity to move heat from one place to another. Think of them as "reversible air conditioners". Just like a fridge keeps your food cold by taking away its heat, heat pumps can either pull heat from the outside to warm a building or push it out to cool the building. They can get this heat from various sources like outside air, water from rivers or lakes, the ground, or even leftover heat from industrial processes. These same sources can be used as heat sinks in cooling mode.

Heat pumps are very energy efficient devices. They can provide three to six units of useful thermal energy for each unit of electricity consumed. In comparison, traditional combustion-based heating systems only provide less than one unit of thermal energy for each unit of energy consumed.

They are also versatile. In cases where buildings have existing gas infrastructure, heat pumps can be combined with in-place gas-fired boilers to minimise efficiency drops in heat pumps in colder weather, helping to increase users' confidence in transitioning to an electrified heating supply.

This type of hybrid heat pump solution will supply most of the heat, generating immediate savings in energy costs, as well as reduce the need to increase the peak electricity load on the grid, which might otherwise be required to power heat pumps during severe cold spells, when heat pumps are less efficient.

The ability to switch between two energy carriers – electricity and heat – adds resilience to the energy system and can reduce costs when using smart controls that factor in energy prices. Over time, the remaining gas use could be replaced with decarbonised fuels, such as renewable biogas.

Heat pump advantages go beyond their high efficiency and hybridisation with traditional heating systems. They can be aggregated to provide services to the grid and, in return, revenues to the heat pumps' owners.

One example mentioned in IRENA's Innovation Landscape Report is the Swiss company Tiko, which aggregates heat pumps, refrigerators and other electrical appliances owned by many customers to create what is now the largest virtual power plant in Europe. Aggregating more than 7,000 households, Tiko's virtual power plants have a total capacity of 100 MW, making it one of the largest virtual power plants in Europe.

This type of virtual power plant company uses digital platforms to control these appliances to shift or reduce peak demand, providing valuable flexibility to the grid while also reducing users' bills. The platform also couples the power consumption of appliances with private electricity generation, such as rooftop PV, to further reduce bills.

To limit rising global temperatures to 1.5°C, IRENA's roadmap to net zero suggests that nearly 800 million additional heat pump units need to be installed by 2050. This represents a 14-fold increase from the roughly 60 million units installed today, paving the way for a significant scale-up of grid services provided by this highly efficient heating technology.

The innovative uses of heat pumps, their beneficial impact on consumers, and strategies to increase adoption are topics that will be discussed in depth during a session on the electrification of heating and cooling in buildings at IRENA's Innovation Week taking place in Bonn from 25th to 28th September 2023.

Source: IRENA

Photographs: (left) Pixabay/xx; (right) Pixabay/xx

When you buy one of the Mercedes EQ models, you get a wall charger as a gift!*

*The offer does not include the installation of a wall charger.

Mercedes-Benz

DECLINING ELECTRICITY CONSUMPTION IN ADVANCED ECONOMIES IS WEIGHING ON GLOBAL DEMAND GROWTH THIS YEAR

EU electricity demand is set to drop to its lowest level in 20 years, but with global consumption expected to increase strongly in 2024, growth of renewables is more important than ever.

Overall growth in electricity demand worldwide is expected to ease in 2023 as advanced economies grapple with the ongoing effects of the global energy crisis and an economic slowdown, according to the IEA's latest Electricity Market Report.

The report's July update finds that electricity demand in the United States is expected to decline by almost 2 per cent this year while demand in Japan is forecast to fall by 3 per cent. Electricity demand in the European Union is set to drop by 3 per cent, similar to the decrease recorded in 2022. Following these two consecutive declines, which together amount to the EU's largest slump in demand on record, EU electricity consumption is poised to drop to levels last seen in 2002.

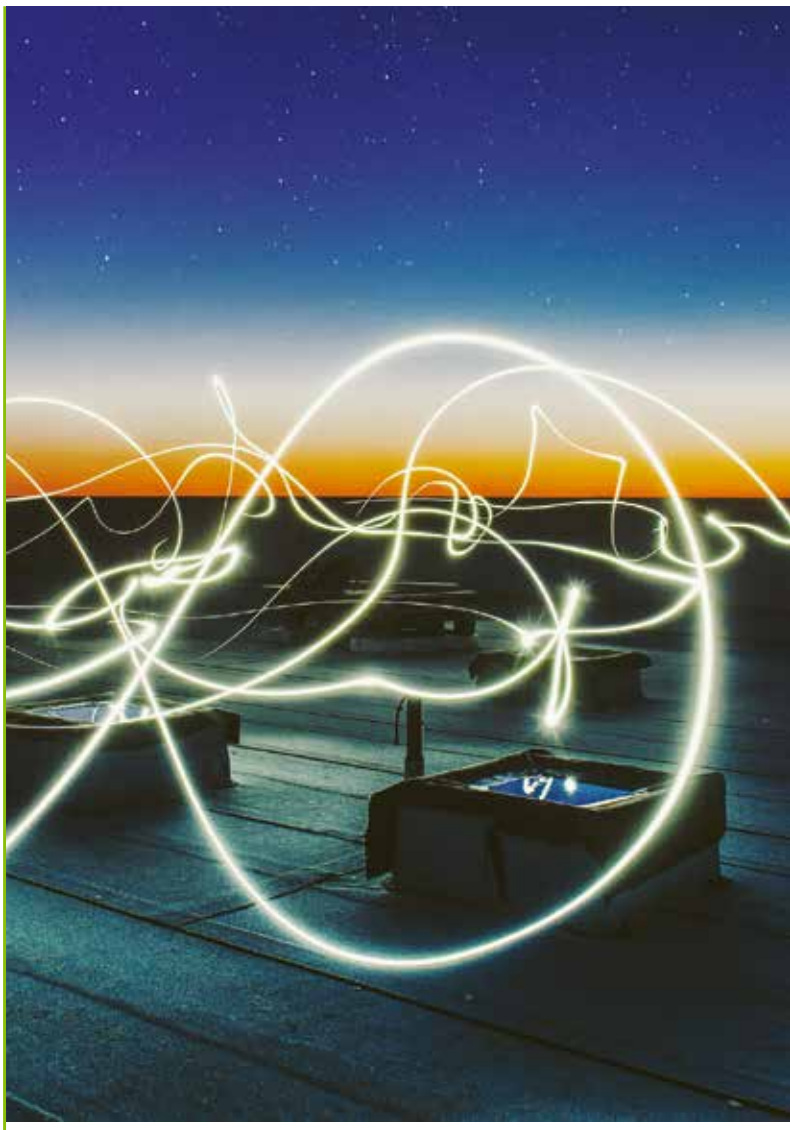
As a result, global electricity demand is set to increase by slightly less than 2 per cent this year, down from a rate of 2.3 per cent in 2022. But assuming an improving world economic outlook, demand growth is expected to pick up again in 2024, rebounding to 3.3 per cent, according to the IEA's latest projections.

Rising global electricity demand is still broadly supported by the electrification of energy systems as efforts ramp up to reduce emissions, by the increasing use of indoor cooling as temperatures climb, and by robust demand growth in emerging and developing economies, according to the IEA report. China's demand is forecast to increase at an average annual rate of 5.2 per cent over the next two years, only slightly below its 2015-19 average. Average annual growth in demand from India through 2024 is estimated at 6.5 per cent, well above its 2015-19 average.

Even as demand in many regions expands, the strong deployment of renewables worldwide means they are now on track to meet all the additional growth in global electricity demand over the next two years. By 2024, renewables' share of global electricity generation will exceed one-third. And depending on weather conditions, 2024 could well become the first year in which more electricity is generated worldwide from renewables than from coal.

At the same time, electricity generated from fossil fuels is expected to decline over the next two years. Electricity generated from oil is projected to fall significantly, while coal-fired generation will slightly decline in 2023 and 2024, after rising 1.7 per cent in 2022.

"The world's need for electricity is set to grow strongly in the years to come. The global increase in demand through 2024 is expected to amount to about three times



the current electricity consumption of Germany," said Keisuke Sadamori, the IEA's Director for Energy Markets and Security. "And we're encouraged to see renewables accounting for a rising share of electricity generation, resulting in declines in the use of fossil fuels for power generation. Now is the time for policy makers and the private sector to build on this momentum to ensure emissions from the power sector go into sustained decline."

In another sign the energy transition is taking hold, the IEA now sees electricity generated from fossil fuels falling in four out of the six years between 2019 and 2024. In the past, annual declines in fossil-fired generation were rare and occurred primarily after global energy and financial shocks, when global electricity demand was suppressed. But in recent years, electricity generated from fossil fuels has lagged or fallen even when electricity demand expanded.

That indicates the world is rapidly moving towards a tipping point in which global electricity generation from fossil fuels will increasingly be replaced by electricity from clean energy sources, the report finds.

Source: IEA

Photograph: Unsplash/Federico Beccari

SKE

Huawei Value Added Partner

Huawei Smart Charger AC Wallbox 7KS/22KT-S0

The smart e-car charging station

The Huawei Smart Charger AC Wallbox charges electric cars with up to 7.4 kW single-phase or 22 kW three-phase. Different modes such as fast charging, surplus charging are selectable and charging times can be scheduled.

Easy configuration of the Huawei e-car charging station, which can be installed indoors or outdoors, makes commissioning via FusionSolar App very simple. SKE has all the information online: **www.ske-solar.com**

3 Charging modes

- Full Power
- Green Power
- Time of Use

EC APPROVES AID FOR RECONSTRUCTION OF HPP "BISTRICA"

The Ministry of Mining and Energy announced that the European Commission, through the Investment Framework for the Western Balkans (WBIF), granted our country EUR 8.44 million in non-reimbursable aid in the field of energy.

These funds will be used to finance the reconstruction of HPP "Bistrica" and the preparation of a Feasibility Study with an Environmental Impact Assessment for the Central Balkan Corridor project.

For the reconstruction project of HPP "Bistrica", "Elektroprivreda Srbije" (EPS) was approved with a EUR 7,722,671 million investment grant, which covers about one fifth of the estimated value of the investment, which is EUR 36.1 million.

Minister of Mining and Energy Dubravka Đedović pointed out that project-technical and spatial documentation has been prepared for this project, construction permits have been obtained, and the start of the works is planned for the second half of next year.

For the preparation of a Feasibility Study for the Central Balkan Corridor project with an environmental impact assessment, which involves the construction of a new transmission line that would connect central Serbia with the region of Kostolac, and in the second phase, the connection of Serbia and Bulgaria with a new 400 kV transmission line and the construction of new transmission lines that would connect the eastern and western Serbia, EUR 724,482 has been allocated, and the beneficiary of the funds is EMS.

The funds for the rehabilitation of HPP "Bistrica" were allocated within the eighth call for investment grants of the Investment Framework for the Western Balkans (WBIF), while for the preparation of the Feasibility Study with environmental impact assessment for the Central Balkan Corridor project, the funds were allocated from the 29th call for technical assistance WBIF.

Source: THE GOVERNMENT OF THE REPUBLIC OF SERBIA

BOOSTING WASTE SEPARATION: NOVI PAZAR AND MOJKOVAC TO RECEIVE 2,000 BINS

Novi Pazar and Mojkovac are taking a significant step towards sustainable waste management with the upcoming arrival of 2,000 additional containers dedicated to separating packaging waste and a recycling press. Supported by the European Union, these environmental protection measures will be facilitated by NALED (National Alliance for Local Economic Development) through the two-year project "BEST Cooperation in Waste Management – Towards a Sustainable Environment."

Implemented in partnership with the Center for Ecotoxicological Testing, the municipality of Mojkovac, and PUC "Gradska čistoća" Novi Pazar, this project aims to enhance waste management systems in the municipalities of Kolašin, Bijelo Polje, and Tutin as well. Expert support will be provided to all participating local governments in developing waste management plans, circular economy roadmaps, and action measures for public utility companies. Additionally, awareness-raising campaigns will educate citizens about proper waste separation at the household level.

With the introduction of the two-bin system, households in these regions will separate mixed waste from recyclable packaging waste such as PET, glass, aluminum cans, and paper. Through comprehensive training, representatives from PUCs and municipalities will learn the best practices for waste collection and treatment.

By 2025, the goal is to implement the new waste separation system in 1,000 households and ten business centers, with a targeted 20 per cent improvement in waste collection rates in Novi Pazar, where only 1.6 per cent of recyclable waste is currently properly treated. In Mojkovac, where the current percentage is zero, the aim is to collect and hand over 396 tons of recyclable waste to authorized operators within two years.

Serbia and Montenegro have committed to harmonizing national legislation with EU regulations and fulfilling the requirements of Chapter 27, which focuses on environmental protection, as part of their journey towards European Union membership.

Source: NALED

Photograph: (bottom left) Unsplash/Dan Meyers; (top right) Unsplash/Nareeta Martin

» MINI WALLBOX CHARGER INCLUDED WITH EVERY PURCHASED VEHICLE
» 4-YEAR WARRANTY
» 4 YEARS OF REGULAR SERVICE

CLEAR SKIES FOR A SUSTAINABLE FUTURE: HOW INNOVATION CAN ACCELERATE AVIATION'S NET-ZERO JOURNEY

In a world where the urgency of combating climate change has reached new heights, few industries face as much scrutiny as the aviation sector. The skies have traditionally symbolized limitless potential, yet they also carry the burden of an undeniable carbon footprint. According to the International Energy Agency (IEA), aviation accounts for 2 per cent of global greenhouse gas emissions. With air travel projected to increase over this decade, these emissions are only poised to further escalate.

Today, there are limited low-carbon solutions and groundbreaking advancements in sustainable aviation fuel (SAF) and alternative propulsion technologies. The significance of these innovations has never been more pronounced. Notably, the IEA forecasts that 50 per cent of the emission reductions necessary for net-zero targets must be driven by technologies that are either still in their conceptual stages or have not yet attained the necessary scalability.

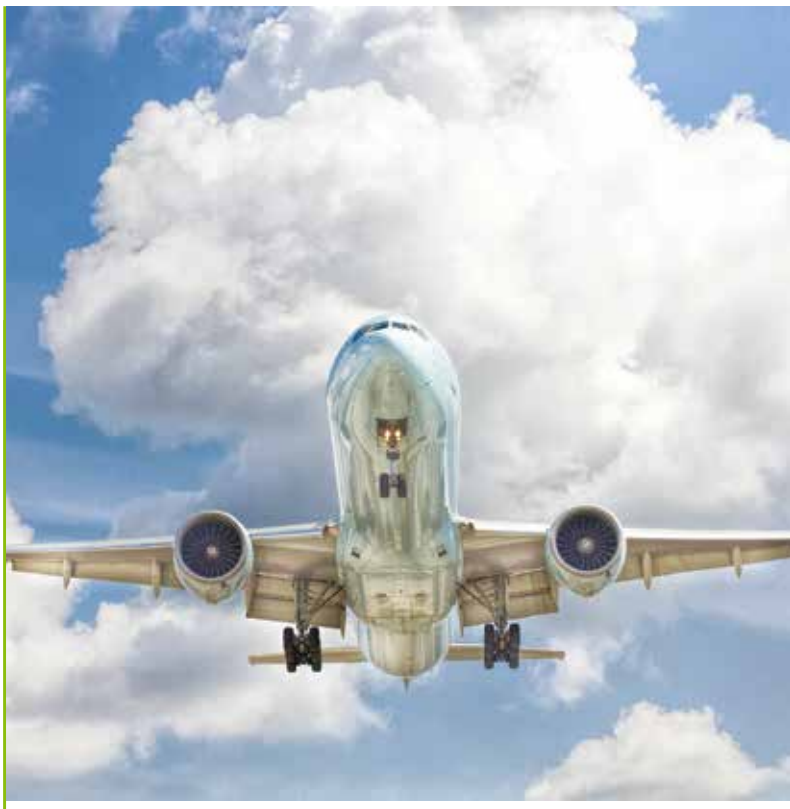
At the core of aviation's decarbonization efforts is sustainable aviation fuel (SAF), which is key to helping reshape the industry's path for emissions reduction in the short to medium term. Current sustainable aviation fuel, mostly sourced from renewables, organics, or waste, is a compelling alternative to traditional jet fuel. Yet, scalability and feedstock limits hinder widespread adoption. Advanced fuel technologies, such as alcohol-to-jet and e-fuels (i.e. SAF85) are crucial for long-term decarbonization, but their nascent stages and lack of scalability pose challenges.

AVIATION TRAILBLAZERS

In the mission to transform aviation and expedite its journey to net-zero, the significance of trailblazers who align climate objectives with business goals cannot be overstated. These innovators have the potential to reshape the industry's course with their ideas and solutions.

Some of the most exciting ideas and solutions we've seen include companies such as Twelve, a pioneer in carbon transformation technology, which is working towards fossil-free aviation fuels made from CO2, water and renewable energy. Then there is Synhelion, which has developed a unique technology to produce carbon-neutral solar fuels from solar energy, and Boom Supersonic, which is designing a new supersonic airliner and committing to using 100 per cent sustainable aviation fuel to power its aircraft.

While sustainable aviation fuel is crucial, achieving net-zero aviation also requires alternative propulsion technologies. Hydrogen aircraft and high-density



batteries show promise, but scalability is uncertain. Companies such as Universal Hydrogen aim to convert existing fleets and offer fuel services, targeting passenger service by 2025. Electrified aviation is also evolving, with startups such as Eviation developing all-electric propulsion for regional flights.

THE SUSTAINABLE AVIATION CHALLENGE

To this end, we're excited to launch the Sustainable Aviation Challenge on UpLink to accelerate the development and adoption of sustainable aviation fuel and other propulsion solutions, with the broader vision of enhancing the viability of promising start-ups in this space. The challenge brings together the World Economic Forum, the First Movers Coalition, which is co-chaired by the U.S. Department of State, industry leaders and technology innovators to drive the aviation industry forward.

Top Innovators will be able to leverage the Forum's network, foster collaborations with industry players and establish a start-up ecosystem that can catalyse value chains. By fostering innovation, collaboration and transformation, this challenge propels exciting market innovation, underscoring the imperative for joint efforts by startups, governments, investors and corporate buyers to achieve global climate objectives and ensure a future where the skies symbolise limitless possibilities while protecting our planet.

Innovation ignites the spark, but collaboration fuels progress. Innovators need robust support ecosystems to turn ideas into reality.

Source: World Economic Forum

Photograph: Unsplash/John Mcarthur

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SMART CHARGING INFRASTRUCTURE FOR EV IN BUILDINGS—PARKING AND GARAGES SOLUTIONS

Electric vehicles (EV) contributed to transformation and decarbonization of transportation. To accelerate the process and take advantage of it brings both to consumers and the environment, it is essential to speed up installation of safe and smart infrastructure for electric vehicles charging.

Majority of current policies focus on setting the public charging infrastructure along principal road routes. However, research shows that around 90 per cent of EV chargers that are going to be installed in the following 15 to 20 years will be in private ownership, in garages and parking spaces of residential, business, and industrial buildings. It implies that existing and new buildings will have to meet growing demand for energy, for up to 40 per cent, which shall thus require controlled energy management.

Leaders of the current transportation electrification trend in Serbia and Montenegro are foremost companies which complement their fleet with electric vehicles and equip their existing garages and parking spaces with suitable charging stations. Beside companies, hotels, hospitality facilities, malls, public garages, and parking spaces also play a significant role wanting to accommodate their customers and provide them with "extra service".

The main issue arises—how much free capacity do the buildings have in their electrical infrastructure to deal

Photographs: Schneider Electric

with the increase in demand for electricity? Namely, the addition of EV charging infrastructure represents an increase in the electricity demand of a building. To avoid overloads and possible "outages" of power systems in buildings and use the available energy in the building in the most efficient way, Schneider Electric has developed EcoStruxure™ EV Charging Expert, a charging infrastructure load management, access management and supervision solution—one within the range of EcoStruxure™ for eMobility comprehensive solutions.

EcoStruxure™ EV Charging Expert is a system for dynamic monitoring and management, which responds to EV charging infrastructure in real time avoiding outages, overcharging and consumption during peak hours. Additionally, it enables integration of available renewable energy sources for EV charging.

EcoStruxure™ EV Charging Expert guarantees continuity of service, enables fair and intelligent distribution of electricity between EV chargers and other sources in the building. This solution also helps limit impacts on electric infrastructure costs and avoid excess effects of prepaid electricity, while providing an excellent user experience for electric vehicle drivers. By using products from this range of solutions, it is possible to control the operation of up to 1,000 charging stations in multi-zone mode, ensuring adequate prioritization of charger users. The best of all is that there are no license fees in case of system expansion.

Research shows that around 90 per cent of EV chargers that are going to be installed in the following 15 to 20 years will be in private ownership, in garages and parking spaces of residential, business, and industrial buildings

Modular transmission and distribution power system

With the latest trends in making charging infrastructure, predictive planning of power distribution and charging infrastructure in buildings becomes immensely significant. In addition to EVlink charging stations, Schneider Electric also offers a flexible modular system for power transmission and distribution in the form of a busbar trunking system called Canalis.

Canalis represents an alternative to laying cables and enables space-saving installation, since one common conductor is used instead of a large number of parallel cables. Thanks to this, the average power losses, and the risk of fire, which exist in common cable distributions, are reduced. The increase in the number of changes to the existing cable distribution system increases the costs, while on the other hand, thanks to its simple installation, Canalis offers the possibility of adding new circuits at minimal additional costs.

Schneider Electric • www.se.com/rs/evlink

STRUJNI KRUG: TRANSFORMATION OF MOBILITY

Traffic jams, polluted air, noise and the need for energy efficiency encourage the rapid development of electromobility. To reach its full potential, we have to solve a series of challenges that electrification causes. The national non-profit association from Croatia—Strujni Krug—has been dealing with everything associated with electromobility. We talked about the Association's activities and engagement and the development of electromobility with Tin Koren, the Secretary-General, who also spoke about some interesting projects.

The Association became operational in 2019, and at that time, it gathered very few electric car owners willing to share their experience and knowledge with others. After a little more than a year, over 1,000 members joined the Association, willing to participate in the development of electromobility in Croatia. After only one year, Strujni Krug became a national e-mobility association with numerous initiatives. The Association has 1,500 active members who maintain contact with more than 10,000 e-car drivers and communicate daily with those who want to become members, so they are the largest association of this type in Croatia.

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Photographs: Strujni krug

The Association's Activities

The Association's main goals are to inform and educate. By encouraging potential buyers to decide more easily on purchasing e-cars, they intend to boost sales of these vehicles in Croatia. By doing so, more people become familiar with the energy efficiency and zero emission of harmful gases provided by electric vehicles.

Mr Koren says that in addition to activities in civil society, what needs to be done is to change the legal framework to unlock a new chapter that will facilitate building solid foundations for developing this sector.

"That is why Strujni Krug is working to change the legal provisions to facilitate the development of e-mobility projects and work more actively on improving and expanding the network of charging stations for electric vehicles," Mr Koren explains.

The Association's pilot project—placing chargers for electric vehicles in street light posts—is also worth mentioning. The project is inspired by developed European countries and is the simplest and most convenient way to improve the charger infrastructure.

"With the implementation of this project, over the next two years, more than 1,000 publicly accessible chargers will be placed in street light posts throughout the cities, which will significantly facilitate the daily use of electric cars for drivers who do not have their own parking spaces, i.e. charging spaces. On the other hand, this pilot project precedes another large-scale project during which we would like to install more than 100,000 such chargers in Croatia by 2028," Mr Koren adds.

In the last three years, the Association has accomplished a lot. First and foremost, they recorded a significant increase in customer interest, as evidenced by the number of registered electric vehicles, which went up by almost sevenfold. In 2019,

The Association has recorded a significant increase in customer interest, as evidenced by the number of registered electric vehicles, which went up by almost sevenfold

730 registered electric vehicles were registered, while there are more than 5,700 this year.

In addition to educating and participating in shaping regulations, proposals, and regulations, with the support of its partners, Strujni Krug also has benefits for its members– discounts for the purchase of electric vehicles, home chargers, comprehensive insurance and others.

Subsidies for e-mobility

Higher sales of electric cars were mostly initiated and facilitated by the co-financing of the Fund for Environmental Protection and Energy Efficiency (FZOEU), whose vision is to support Croatia's sustainable development, reduction of greenhouse gases, development of circular economy, richer biodiversity, better waste management and the implementation of similar activities to benefit environmental protection. In cooperation with FZOEU, the Association is actively working on a very effective model for distributing funds intended for co-financing. The biggest obstacle to this initiative was the limited co-financing funds, so this year, they are also helping FZOEU find the optimal model for allocating funds. Negotiations with the Tax Administration regarding the abolition of VAT on the purchase of electric vehicles are ongoing, which would further facilitate this process, as the state would no longer have to allocate so much money to co-finance the purchase of these vehicles.

Importance of infrastructure

When a person decides to buy an electric car, despite the availability of certain incentives and benefits, the infrastructure poses an inevitable issue. Infrastructure is important because otherwise, travelling by electric vehicle must be planned in minute detail. In addition to the mentioned pilot project, under the auspices of the European Association for Electromobility (AVERE), the Association participated in drafting the proposals for the development of charging station infrastructure in the European

Union, based on which the European Commission wrote AFIR (The Alternative Fuels Infrastructure Regulations).

"This regulation prescribes that Member States should provide a total output power of at least 1.3kW for each registered electric car and van, and 0.8kW for each registered hybrid on the state's territory in publicly available infrastructure. Furthermore, Member States must provide fast chargers with a power of at least 150kW, on every 60 kilometres of road in both directions along the core

Last year, Strujni Krug participated in adopting the new Street Traffic Safety Law, which prescribed special rules for using electric scooters in public areas

of the Trans-European transport network until 2025," Mr Koren says.

Contribution to tourism

It is a well-known fact Croatia is a popular tourist destination and the first vacation choice of many Europeans. If tourists outside our region knew about the good infrastructure network of electric chargers, it would probably further improve the results of the tourist season. We would like to point out that Strujni Krug regularly launches campaigns focused on installing chargers in tourism areas, thus trying to highlight the importance of installing chargers in catering facilities for their guests and clients.

In late 2022, around 950 publicly available chargers with around 1,700 charging stations were available. That's a good statistic, considering about 3.4 electric vehicles per publicly available station. We should also consider that over 60 per cent of drivers charge their vehicles at home, which is why public chargers are mostly free.

In addition to the achieved progress in e-mobility and currently a sufficient number of chargers, there are still some shortcomings. Citizens in residential buildings do not have parking spaces for charging. The infrastructure on the main roads and tourist centers has to be substantially improved due to the high traffic during the season.

Benefits for members and advantages of RES

Strujni Krug cooperates with most electric vehicle showrooms, insurance companies, home charger manufacturers and solar power plants, which makes the Association's members eligible for numerous discounts and benefits when purchasing and maintaining vehicles. Furthermore, the Association encourages using renewable energy sources, primarily solar energy, so numerous members and electric vehicles can further round off their personal environmental story. As it possesses an awareness of the advantages of RES, the Association often recommends to its members that, in addition to electric vehicles, they should also consider purchasing solar panels. It was a very effective way of generating electricity last year due to the energy crisis and unstable prices of energy and fossil fuels. All this has also contributed to a considerable number of the Association's members producing electricity from RES for their own needs, and many members are planning to do the same in the coming period.

Every day, Strujni Krug strives to make society aware that electric vehicles are not strange, foreign and unknown in our region. On the contrary, electric vehicles are a wise and economical choice for both the individual and the community because one e-car can change an individual's monthly costs for the better. If the whole community drives them, that can benefit the environment.

Prepared by: Milica Vučković

POWER OF SUSTAINABILITY FESTIVAL 2023

Business conference Power of Sustainability Festival 2023 Building a sustainable future for the Western Balkans under the motto Creating a sustainable community through dialogue! The starting point for green and digital transition will be held in Mostar (Intera Technology Park) on September 21–22, 2023, starting at 11 a.m.

The event will bring together experts from different sectors who will discuss the latest trends, innovations and practices in the field of sustainable development.

Topics related to sustainable development and socially responsible business: innovation, environmental protection and climate change, investment in renewable energy sources, and sustainability in cities and local communities are the reason for organizing a conference that will present through interesting panels and speakers the potentials and resources at our disposal, which can directly contribute to the sustainability of the Western Balkans.

The conference will present examples of how companies, organizations and individuals can contribute to sustainable development in various areas, such as:

- Investments in green energy—solar energy and wind energy, energy from geothermal sources
- Application of circular economy—waste management and its energy utilization, restoration of natural resources
- E-mobility—decarbonization of the transport sector to create a cleaner, healthier and more accessible future
- Sustainability in tourism—ecological, economic and socio-cultural aspects of tourism development.

It is an excellent opportunity to share experiences, network with other industry experts and learn about new initiatives in sustainable development.

The conference will gather more than 150 participants from the business world, government institutions, and scientific and international community representatives from Bosnia and Herzegovina and the Western Balkan region.

Numerous joint activities and gatherings will provide opportunities for business discussions and networking.

Our mission is to significantly influence the creation of a positive business climate for investors. To encourage the creation of strong business ties and strengthen the sustainability of all the economies of the Western Balkan region. Together, we can detect opportunities and challenges, explore new opportunities for cooperation, attract investments, place the right products on the right markets and combine knowledge and experience for mutual prosperity—say the organizers.

The upcoming event will create an environment where stakeholders can recognize, meet and connect.

Foreign Investors Council–BiH

Photographs: *shuterstock*

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INNOVATIVE PROBIOTIC DRINK HEALTHIER FOR PEOPLE AND NATURE

And while Serbia lags behind more developed countries in many respects, it is also proud of its young, talented people who win awards at knowledge competitions. The Biljna tajna student team stands out among the best. The uniqueness of their innovative product VeYo made from almond pulp—probiotic yogurt is recognized all over the world, and we spoke with Milica Milutinović, B.Sc., an engineer from the Department of Biochemical Engineering and Biotechnology of the Faculty of Technology and Metallurgy in Belgrade, about the inspiration for its creation and the successes that followed.

Photographs: (top) Pixabay/Kristina Zaturovska; (bottom) courtesy of Milica Milutinović

ECOLOGY AND HEALTH

It is believed that as much as 65 per cent of the world's population has lactose intolerance. Therefore, besides having a pleasant taste, plant-based drinks and other products that do not contain milk proteins, lactose, and cholesterol are excellent substitutes for milk and represent a good alternative for this growing group of consumers.

Their story begins during the preparation of the thesis of Milica and her colleague Sara Živanović, in which they should have included a detailed analysis of almond pulp. After discovering the untapped potential of this raw material, they began to devise ways to use it. Since they prefer plant alternatives to milk, in agreement with the other members, they came up with the final solution—a probiotic eco-drink based on almonds. At that moment, the team Biljna tajna was born, and the implementation of the idea was supported by Professor Marica Rakin and colleagues from other faculties, with whom they are very good friends.

– While Sara and I worked for months in the laboratory on technological development, the techno-economic aspect and business model were created by our colleagues Duška Rakin and Tamara Živanović, students of the Faculty of Economics, and the graphic design and marketing plan was realized by Aleksa Simić, a student of the Faculty of Agriculture—says Milica Milutinović.

The uniqueness of the VeYo product

The almond-based probiotic drink is made from the pulp that remains as a by-product after the production of almond milk, which until now was considered waste. Its importance is reflected in the technological improvement and improvement of environmental protection because, unlike the existing herbal drinks on the market, it is produced exclusively from waste pulp and retains exceptional quality. It is also an example of implementing the circular economy concept at the national level.

> The innovative solution for using waste almond pulp is also an example of implementing the circular economy concept at the national level

Obtaining a quality, nutritionally rich and tasty product required a lot of work in the laboratory to find the right recipe and ideal conditions for this type of fermentation. The most interesting part for everyone, says Milica, was the taste testing, with the addition of vanilla flavoring or freeze-dried fruit. They are currently working on improving, optimizing, and protecting the product so that everything is ready for the next steps they are planning.

Competitions and successes

The first competition of the young team was in Serbia at the Competition for the best technological innovation. This event, explains Milica, was extremely important for them since they had organized workshops on developing entrepreneurship and creating a business plan. Appearing before the jury in the competition's final required months of intensive preparation, which contributed to the victory.

The victory encouraged them and paved the way for the POPRI regional competition, which has been promoting youth entrepreneurship since 2004. At this year's competition held in Sarajevo, as part of the EU Strategy Forum for the Adriatic-Ionian Region (EUSAIR), teams of young people from each of the participating countries gathered to present entrepreneurial ideas, and the team Biljna Tajna won this competition in the student category.

The confirmation of their good work from experts, the support of mentor Aleksandar Vekić from the Faculty of Technical Sciences in Novi Sad, and the help of family and friends encourage them to continue to believe in their idea and develop their product in the future. Persistent work, expertise and teamwork are the most important factors for developing entrepreneurship.

Prepared by: Katarina Vuinac

Photograph: courtesy of Milica Milutinović

EKO FOND—SUPPORT FOR THE DEVELOPMENT OF ELECTROMOBILITY IN MONTENEGRO

The development of electromobility in Montenegro has been on an upward trajectory in the last few years. There are more and more electric and hybrid vehicles on the streets, and subsidies from the Eko fond (Environmental Protection Fund) contribute to this to a large extent. At the beginning of July, for the third year in a row, they announced three public calls for subsidizing the purchase of electric and hybrid vehicles for individuals, business people and the public sector. Draško Boljević, executive director of the Eko fond, points out that more and more requests for subsidies are coming to their address.

– This is an indicator that our efforts have been recognized, and we are particularly pleased by the fact that the number of interested people is growing year by year, and more and more requests for subsidies are arriving at our address, which means that the budget we have at our disposal is being spent to the maximum—says Boljević. For this year, the budget for subsidies amounts to 399,242 euros. 99,243 euros were set aside for users who are natural persons for certain categories, 100,000 euros for the economy and entrepreneurs, and 200,000 euros for the public sector.

CLEAR REGULATIONS

The criteria for granting subsidies are clearly defined, as well as the documentation that must be prepared. Eko fond points out that citizens are knowledgeable and prepare the documents they need to apply for the competition on time.

Photographs: Eko fond

The fact that during the first ten days of the competition, 35 requests arrived shows great interest in the funds. The public competition for natural persons, the economy, and entrepreneurs is open until the funds are used up, and for the public sector, the deadline is November 31, 2023.

The subsidy amount for the L-category electric vehicles ranges from 400 to 1,500 euros per vehicle. For electric vehicles of categories M1 and N1, the subsidies amount to 5,000 euros, while for hybrid vehicles (plug-in and full hybrid), the subsidies amount to 2,500 euros.

– In previous years, and I hope it will be the same this year, allocated funds were distributed to the last cent, and I expect it will be the same this year as well. I sincerely hope that the funds we allocated will be sufficient and that we can fulfil all the requests that come to us—adds our interlocutor.

It is a fact that more and more electric cars are driven in Montenegro, but the numbers are not so impressive. According to our interlocuter's estimate, based on his information, there are around 500 electric and hybrid cars in Montenegro.

– Unfortunately, we do not have accurate data on how many hybrids and fully electric cars there are. Eko fond's experiences show that the relationship between hybrids and electric cars is slowly leveling off. In the first year of subsidy allocation, it was in favor of hybrid cars, and now we are getting to the point where the ratio is 50/50—concludes Boljević.

Network development and subsidies for chargers

The rapid development of electromobility must be accompanied by appropriate infrastructure, primarily the network of chargers. In Montenegro, according to Draško, this area is not legally regulated. Owners of electric cars are forced to fend for themselves, charging their vehicles at their chargers if they have them and using some that are public. While they are waiting for this area to be legally regulated, the Eko fond team is planning to allocate some of the subsidies for the purchase of chargers for electric vehicles. If everything goes according to plan, a competition for chargers should be announced by the end of the year. In this way, they want to complete the story by subsidizing the electric car and the charger.

Eko fond was founded four years ago. During this period, they managed to consolidate financially, and now they have a stable income that enables them to implement projects. They work in cooperation with the Ministry of Ecology, Spatial Planning and Urbanism, the Ministry of Finance and Social Welfare and the Ministry of Economic Development. They emphasize that they need the support of the institutions and the implementation of the adopted laws and will take care of everything else.

Prepared by: Milica Radičević

PUBLIC INSTITUTIONS

In Eko fond, they are not satisfied that the institutions have not shown by their own example and switched to electric vehicles, while the economy and citizens are doing so.

– Couriers, postmen, and delegations are the most polluting; they are constantly on the move and do not use the opportunity to register and use subsidies to purchase electric and hybrid cars. That's why we use every opportunity to invite them to think and buy these vehicles. However, unfortunately, we still have institutions that purchase cars on diesel fuel, which is simply paradoxical for the state, which is declared as ecological—notes Draško Boljević.

PROCREDIT BANK ON THE ROAD TO CARBON NEUTRALITY

Saving energy, sustainable use of natural resources, less waste and reduction of harmful gas emissions are some of the clearly defined and planned goals of ProCredit Bank. They firmly adhere to internal approaches to environmental protection, and they pass their excellent practice on to clients. We spoke with Ivan Smiljković, a member of the Executive Board of ProCredit Bank.

Q. ProCredit Bank is moving towards being carbon neutral in the future. How do you plan to achieve this?

A. ProCredit Bank has been building a systematic environmental protection approach for over a decade. The first steps were taken in 2012 when we defined procedures regarding environmental protection in our business. Both internally and externally, we continuously monitor our impact on the environment. We really try to take a holistic approach and cover all ESG aspects. To reduce CO2 emissions, ProCredit Serbia defined replacing conventional official vehicles with electric and low-emission hybrid cars as one of the measures. Today, our fleet is one hundred per cent green—it consists of a total of 44 such vehicles. It is important to point out that ProCredit Serbia has set up a network of more than 40 chargers for electric cars across the country, which citizens can use completely free of charge. We believe that in this way, we are working to develop awareness about reducing harmful emissions. ProCredit Group joined the Net-Zero Banking Alliance and is committed to setting short-term and long-term goals for reducing emissions. I am very proud of that fact.

Photograph: ProCredit Bank

ProCredit Serbia very resolutely implements the green agenda—the share of the green portfolio in the bank's total loan portfolio is slightly more than 15 per cent, while at the level of the ProCredit Group, the share of the green portfolio last year amounted to as much as 20.2 per cent

Q. How does ProCredit Bank help clients improve environmental awareness, make it easier to decide on sustainable and green investments and implement them in their business and everyday life?

A. We strategically invest in renewable energy sources; we have professional people and excellent expertise in that domain, especially in solar power plants. We financed the construction of several large solar power plants in Serbia, and I would single out the largest DeLasol in Lapovo, with a total power of 10 MW. But we don't only finance economic subjects. We also have incentive loans for energy efficiency intended for the population, with a return on investment of up to 20 per cent, in cooperation with the GEFF and the EBRD. This way, you can secure funds for a home solar energy plant, a heat pump, new PVC joinery, insulation, solar water heaters and more. In addition to providing funds, the bank also has an advisory role—the client can completely rely on us because we usually work on a turnkey model.

Q. We hear the term green finance more and more often. What are the advantages of this type of financing, and how significant are they for ProCredit Bank?

A. No bank should claim to be green if it does not monitor environmental impacts on the external level, which means through the standards related to lending to clients. Those standards are detailed in ProCredit; they have been developed for years and follow the development of the markets in which all banks from our Group operate. ProCredit Serbia very resolutely implements the green agenda—the share of the green portfolio in the total loan portfolio of the bank in Serbia is slightly more than 15 per cent, while at the level of the ProCredit Group, the share of the green portfolio last year amounted to 20.2 per cent. We have set even more ambitious goals for the years ahead—to significantly increase investment in sustainable and green projects in Serbia with favorable and incentive credit lines.

Q. What novelties is ProCredit Bank preparing for the next period? In which segments do you plan to improve your business?

A. Relying on 20 years of experience from the headquarters in Germany, we have been an innovative bank in Serbia for years. We became the first to become a 100 per cent online bank, opened Zone 24/7, were the first to enable clients to pay their bills via Apple and Google Pay, and were the first to start promoting green financing. In addition, we always see room to be even closer to clients, listening to their needs. Since we have noticed that interest in term savings has been growing lately, we have provided attractive interest rates for term deposits. We will soon launch a redesigned and improved e-banking and m-banking application, and we have enabled customers who have online shops to pay via the ProCredit e-commerce platform. We strive to be a true green bank and a leader in digitization. We continue to set standards in the financial sector in which we operate.

IVAN SMILJKOVIĆ was born in 1981 in Niš, where he graduated from the Faculty of Economics, majoring in Financial Management. In 2007, he started working at ProCredit Bank in credit risk analysis, later reorienting himself to work with business entities. He was appointed branch manager in 2011, and two years later, he was appointed Head of the Department for Small and Medium Enterprises. He became a member of the Executive Board of ProCredit Bank in 2015. From 2015 to 2019, he was the chairman of the Board of Directors of ProCredit Leasing a.d. Belgrade, and for several years, he served as the chairman of the Board of Directors of ProCredit Bank in Moldova. He is a member of the Board of Directors of the German-Serbian Chamber of Commerce. Since this year, within the same chamber, he is also the president of the Committee for Green Economy and Sustainable Business. He strives to build sustainable relationships with clients based on trust, reliability, and respect.

Interviewed by: Milica Radičević

Photograph: courtesy of Ivan Smiljković

RES SERBIA 2023 CONFERENCE

RES Serbia 2023—On September 14th in Vrdnik, the traditional gathering of the most important stakeholders in the green energy industry

After the highly successful conferences held in 2021 and 2022, it is time for a new gathering of the most important stakeholders in the green energy industry at the RES Serbia 2023 (RES Serbia 2023) conference, which will be held on September 14 in the Vrdnička Kula ethno-complex on Fruška gora.

The conference will focus on the first auctions for wind and solar and new renewable energy projects. It will be officially opened by the Minister of Mining and Energy, Dubravka Đedović, together with the acting Director General of EPS AD, Dušan Živković.

The highest officials of the Republic of Serbia's Ministry of Mining and Energy, EMS, EBRD, Masdar, Enlight, Elicio, Nordex, European associations WindEurope and SolarPower Europe, representatives of leading financial institutions, as well as other representatives of the renewable sources sector, have confirmed their attendance.

As the RES Serbia 2023 conference takes place exactly one month after the first auctions for wind and solar, this will be an exceptional opportunity to analyze the conditions and results of these auctions, as well as potential market solutions for RES projects that will be implemented unrelated to auction incentives. The conference participants will also discuss financing conditions, problems in the supply of wind farm equipment and exuberant increases in equipment, transport and logistics prices.

The conference will have a total of five-panel discussions with the Regional Director for the Western Balkans of the European Bank for Reconstruction and Development, Matteo Colangeli, Financial Director of the Masdar Company, Niall Hannigan, Managing Director of the Nordex Company for the Mediterranean area, Anne-Catherine de Tourtier, Director of the SolarPower Europe Association, Walburga Hemetsberger, Business Development Director of the New Energy Solutions Company, Marijan Rančić, General Manager of AskUs, Aleksandar Savić, Free Market Trade Sector Director at EPS, David Žarković, Chairman of the Executive Board of UniCredit Bank Serbia, Nikola Vuletić, General Manager of Fractal, Ante Tojčić, and many others taking place.

Elnos Group, Masdar Taaleri Generation, Enlight, Elektrozapad, New

Photographs: RES Serbia

Energy Solutions, NLB Banka, Wind Park Plandište, UniCredit Banka, Erste Bank, the Sungrow Company are the sponsors of the RES Serbia 2023 Conference, in cooperation with its authorized distributor Comtrade Distribution, Nordex and ProCredit Bank. EBRD and EPS are institutional sponsors, while media sponsors are Energy Portal, eKapija, Nedeljnik, Montel Energetika and E2.

The conferences held the previous two years attracted much attention from the media, experts and citizens alike. The participants, including representatives of the world's largest companies, banks, investors, and state institutions, spoke about important topics and discussed current issues, such as electricity prices, energy transition and decarbonization.

At last year's conference, it was pointed out that Serbia should have at least 5GW in RES by 2030 and that the EBRD wants to have 50 per cent of green projects in Serbia. The participants added that one of the cheapest energies in the world comes from RES, that the green transition has political support and that investors in wind power plants see Serbia as a key market in Europe.

The first conference, RES Serbia 2021, gathered more than 200 participants, 20 panelists and five moderators who discussed the most popular topics related to renewable energy sources – from green energy transition to investments in RES. The great success of this conference just validated the need for an exchange of opinions and gathering of representatives of the green industry in Serbia and the region, which is becoming a tradition.

RES Serbia

FROM ANTIQUE CUTLERY TO UNIQUE JEWELRY

Every home has items that will end up as waste in the future. Some are intended for one-time use, and among others, there are those with a lifetime of several decades. Those belonging to family heirlooms are kept in some corner of the house for sentimental reasons and wait for the day when their owner will simply throw them away. If the perspective of old things were changed, the reality could look like this—if objects that we no longer need end up, instead of being thrown away, in the hands of the right person, they can get another chance and the possibility of being usable.

Among such things is the old cutlery, which is often woven with handwork through unique patterns, and new generations are replacing it with simpler and more modern sets. By changing the angle of its observation, when the antique cutlery ends up in the hands of Milica Radan Jovanović and her husband Slobodan, it becomes a unique jewelry and brand—SikiliFrik.

Milica started making this kind of jewelry almost 15 years ago when looking for something to last a lifetime. Upcycling or reshaping old cutlery into jewelry is inspiring for her.

One of the biggest challenges at the beginning of creating jewelry is the nature and type of material used. It requires a special tool. Although very demanding to process, inox, stainless steel, various types of steel and chrome are also the main advantage of this type of jewelry because stainless steel does not cause allergies, will not corrode, and is easy to maintain.

A constant challenge in the work is the continuous search for even more beautiful, older, and interesting pieces of cutlery. At the beginning of production, the necessary material was purchased at flea markets and online stores such as Limundo and Kupindo. Today, six years later, more and more people are contacting our

Photographs: Nemanja and Jelena Jovanov

polished. It is often necessary to heat certain pieces so that we can bend them. Milica explains that certain products are ready for use after polishing, and some, such as necklaces, earrings and bracelets, also have a joining phase—adding links, buckles, chains, and others.

She is aware of the need to contribute to environmental protection.

HISTORY AND VALUE

Every fork, spoon and knife used in the work has its own history and some of its own stories. Making jewelry from such, mostly antique and collector's items, allows it to be unique and have its own character. It is one of the main factors affecting the final price of the jewelry.

A constant challenge in the work is the continuous search for even more beautiful, older, and interesting pieces of cutlery

interlocutor to hand over their cutlery to be made into jewelry. However, the invention still requires a lot of effort.

– The whole process starts with the already mentioned search. When we find something interesting to us to process, the transformation follows. Before we start reshaping, we perform one of the most important stages in the process: cleaning. It includes washing, boiling, and disinfection of cutlery. Then comes the design of what we would make from the obtained material, and only then we go to the workshop. When the material reaches the workshop, it is measured, drawn, cut, drilled, bent, and

She says that waste is not managed in the best way in Serbia and that the key factors are insufficient awareness raising and the lack of a sufficiently developed infrastructure for recycling. Her family is guided by shopping rules that, she says, are worth remembering from time to time, and they found them written on the door of a kindergarten: *Use what you have. Keep what you have. Fix things. Borrow things. Make it yourself. Exchange with others. Buy used. Buy a new one.*

When it comes to jewelry, they make it for both men and women, and the offer includes necklaces, pendants, bracelets, brooches, fridge magnets, earrings, and rings. In meetings with people, the reactions are varied. Still, our interlocutor is motivated to continue her work by the support she receives and people's enthusiasm when they learn that all jewelry is recycled, that is, upcycled.

– We would like our work to motivate and inspire others to engage in recycling/upcycling in any way—says Milica and adds that everyone should think about their consumption and thus contribute to the preservation of our planet.

Prepared by: Katarina Vuinac

Photographs: (top left) Nemanja and Jelena Jovanov; (all others) courtesy of Milica Radan Jovanović

SEE ENERGY—CONNECT & SUPPLY 2023

The two-day regional energy conference and the SEE ENERGY—Connect & Supply 2023 exhibition will be held at the Sheraton Hotel in Novi Sad on October 2 and 3, 2023.

The conference will focus on innovations, decarbonization in the business and traffic sector, electricity storage, energy market, financing renewable energy sources projects, green lending, and technologies and conditions for implementing heat pumps.

The SEE ENERGY platform will bring together leading experts, investors, industry representatives, decision-makers, technology manufacturers, consulting firms, government and financial institutions. This regional event is a unique opportunity to connect with key players in the industry, learn about the latest technologies and policies, and contribute to sustainable energy development.

Free participation with registration on the website

Interested parties can attend the conference for free and through the ZOOM online application, with mandatory registration on the official website of the event's organizer -serbio.rs.

How to do business responsibly in challenging times, and how can companies transform their business towards a sustainable future?

On the first day after the official opening, the participants of the "Decarbonization in the Economy: Innovations, Challenges and Competitiveness" panel will talk about

The SEE ENERGY platform will bring together leading experts, investors, industry representatives, decision-makers, technology manufacturers, consulting firms, government and financial institutions

Photographs: SERBIO

the procedures, permits and licenses that are necessary to implement decarbonization projects. Highlighting best practices and industry examples that show the way to decarbonization, the panel will present how businesses can respond to this new reality. The focus will be on identifying innovative solutions and procedures that enable the transition to cleaner energy. Along with the topic of decarbonization in the business sector, the conference will also cover important aspects of decarbonization in transportation and the oil industry.

On the first day, the topics will be connecting RES projects to the power grid in light of the requirements for forming electricity storage and key aspects of financing renewable energy projects and selling electricity on the free market.

Interested parties can attend the conference for free and through the ZOOM online application, with mandatory registration on the official website of the event's organizer—serbio.rs

The conference participants will also discuss innovative approaches to project financing and electricity trade and how these factors contribute to developing renewable energy. This panel will provide insight into the practicalities of financing and trading electricity to ensure the sustainability and growth of the renewable sector.

Day of heat pumps

Co-organized with the German Organization for International Cooperation—GIZ, the second conference day will be dedicated to the regulatory and legislative development of heat pumps and financing the heating sector from renewable energy sources.

Examples of good practices for using heat pumps in Germany will be presented by the European Heat Pump Association (EHPA) and representatives of Fraunhofer University.

With notable speakers, panel discussions and presentations, SEE ENERGY—Connect & Supply 2023 is a unique opportunity to network and share experiences with leading industry experts.

The conference participants will be able to enjoy a comprehensive and inspiring programme that will bring them closer to the goal of a sustainable energy transition.

SERBIO

ENERGY TRANSITION: AVAILABLE ENERGY WITH ENVIRONMENTAL PROTECTION

According to United Nations data, in 2020, 733 million people on Earth did not have access to electricity. One of the goals of the 2030 UN Agenda is that by 2030, the planet's entire population should have access to available, reliable, and modern energy systems. As things stand now, this goal is quite ambitious, especially considering that all participants in the energy market are simultaneously required to produce energy in a way that contributes to accomplishing another UN sustainable development goal—stopping climate change. That is why all companies in this industry face a kind of energy transition, with one of the goals being decarbonization, that is, the reduction of greenhouse gas emissions. We asked NIS, the largest domestic oil company, how this looks in practice.

NIS experts first state that the company has invested 900 million euros in environmental and business projects that indirectly boost environmental protection since 2009. The result of these investments is that the company has reduced emissions of harmful gases by as much as 90 per cent in the last ten years.

NIS adds that the company operates in accordance with the sustainable development principles and that its activities have contributed to the accomplishment of 12 of the 17 UN goals. These include goals related to available and renewable energy and those closely related to stopping climate change. This is evidenced by the company's sustainable development

Photographs: NIS

From 2012 to 2022, NIS accomplished a total increase in energy efficiency by 33 per cent, contributing to a more rational use of resources and environmental protection

reports. Namely, NIS recently published the 13th consecutive verified report on sustainable development under the slogan *Our Sustainable Community*, in which it informs the public about its key activities in 2022.

"NIS nurtures a long-standing tradition of presenting crucial activities related to sustainable development to the public comprehensively and transparently. We have aligned our business goals in that segment with the UN's Sustainable Development Goals. Our reports don't only cite a list of completed projects but also contain a plan of what we need to achieve in the coming years to contribute to comprehensive development, resource conservation and environmental protection. One of our priorities is to impact the progress of the community in which we operate with our activities and business successes," said Stefan Despotović, director of the NIS PR Centre.

The NIS 2022 Sustainable Development Report states that implementing its green agenda and following the determination to increase the share of renewable energy sources, the company has started implementing the project of installing solar panels on its retail outlets. So far, this project has been realized at 15 petrol stations, where 1,175 panels have been installed. This project has positive business and environmental effects. Namely, with solar panels, the total savings in electricity procurement will amount to about 600MWh annually. At the same time, the reduction of carbon dioxide emissions is estimated at more than 600 tonnes per year. The company states that it will continue installing photovoltaic power plants in its retail facilities and other facilities in the coming period.

Also, the Report states that TE-TO Pančevo, the first combined gas-steam power plant in Serbia, which produces electricity and heat based on natural gas as a more environmentally friendly fuel, was commissioned last year. The produced electricity is delivered to the Serbian power grid, which, in turn, contributes to the energy stability of our country.

It is also important to point out that in 2022, the practice of quarterly monitoring and reporting on GHG emissions was introduced in NIS with the aim of more precise quantification and monitoring of trends.

The company's experts also point out that energy efficiency projects are essential for the energy transition. Thus, from 2012 to 2022, NIS accomplished a total increase in energy efficiency by 33 per cent, contributing to a more rational use of resources and environmental protection. Our largest oil company also contributes to decarbonization by implementing the project of injecting separated carbon dioxide into deposits, which has brought positive business effects and reduced gas emissions. Also, in the NIS Sustainable Development Report for 2022, it is stated that the Energetika Block was formed in the company, and one of its main tasks is accelerating its energy transition. This way, NIS will contribute to achieving the UN's Sustainable Development Goals.

NIS

FROM BILLBOARDS TO 21ST CENTURY FASHION

In the age of the consumer society and the fast pace of life, billboards, advertisements, and slogans do not last long. Very quickly, each of them becomes replaced by some newer content. However, in the same era, an interesting initiative appeared—imagine walking around the city and carrying a bag whose story began with a large advertisement on a billboard in your street. Recycling PVC foil for making billboards into a brand-new, unique bag significantly contributes to the circular economy, which relieves the planet and natural resources. Ivanka Stamenović creates art and fashion from waste, and the ecological, social enterprise EkoBag is a special story about the renaissance of ordinary advertising materials.

Ivanka's story begins at the National Employment Bureau, where she went to learn more about self-employment tools. Then, quite by accident, she learns that the Initiative for Development and Cooperation (IDC) is looking for women who know how to sew. She recognized her chance. She is a textile designer by profession, and she saw a chance for progress

Photographs: EkoBag; (on the next page, top right) courtesy of Ivanka Stamenović

The design of the product is entirely part of the imagination of Ivanka and her daughter, who studied industrial design, and her graduation thesis was a bag for an electric scooter, which they then protected at the Intellectual Property Office

Ivanka Stamenović
textile designer

as someone with a lot of experience and even more will. With the help of Miodrag Nedeljković from IDC, the project's creator and with Ivanka's realization, unique bags were sewn.

The business runs in such a way that when some companies wish to cooperate with EkoBag, they donate billboards from which completely new products are made in the workshop. Then they buy new products with a sewn-on logo, recognizable colors, and billboard messages to continue the marketing campaign. They distribute newly created products to their employees or at promotions and workshops.

– Our target group are companies that advertise in this way, promoting products or services. The degradability of banners takes 1,500 years, and if they are found in nature, they can even lead to soil contamination because they are impermeable, waterproof materials—says Stamenković.

During Ivanka's training for this project, her abilities came to the fore. She designed a bag for a car manufacturer's promotional material, and as the company was very pleased, they doubled the quantity requested. Quality work and dedication contribute to the production of each bag and today are the trademark of EkoBag, which numerous large and well-known companies have recognized.

Posters, which vary from 40 to 600 m2, represent a substantial amount of waste created due to one-time advertising needs. However, when EkoBag turns them into conference, business and everyday bags, wallets, folders, cases, wallets, and cardholders (clips, wallets...)—it becomes a range of products imbued with environmental awareness. The whole process proceeds by taking the foil from the billboard after the advertising campaign is over. Then, it is cut into smaller pieces, washed—and the cutting and sewing can begin.

The product's design is entirely part of the imagination of Ivanka and her daughter, who studied industrial design, and her thesis was a bag for an electric scooter, which they then protected at the Intellectual Property Office. She received confirmation for this design with gold medals and participation at the 36th International Exhibition of Inventions, New Technologies, and Industrial Design.

The reason why this company is characterized as ecological became clear in this story, but it is also social because it employs women over 45 years old who belong to a hard-to-employ group.

Every future look at the billboard will remind us that we can create a world where things are not thrown away lightly but transformed into new functional and quality products. Recycling is not only a technical process but also social responsibility, art, and, for EkoBag, everyday business.

Prepared by: Milica Vučković

BANJALUKA ENERGY FORUM —LET'S SAVE ENERGY

Banjaluka Energy Forum—Let's save energy will be held on September 7 this year in the Stara Ada Island complex in Banja Luka

The Union of Employers of the Republic of Srpska, with the support of the Ministry of Economy and Entrepreneurship of the Republic of Srpska, organizes the Banjaluka Energy Forum—Let's save energy, which will be held on September 7 this year in the Stara Ada Island complex in Banja Luka.

The event was conceived as an open-air fair, with introductory presentations by relevant panelists. The event will gather more than 300 participants, including regional producers in renewable energy sources and energy efficiency, potential users—companies, representatives of the Government of the Republic of Srpska, the EU, banking sector representatives and international organizations. Exhibitors from the Republic of Srpska, Federation of Bosnia and Herzegovina, Serbia, Slovenia and Croatia will present their products and services in the presentation part of the event and at the stands.

Energy saving is a crucial world topic that requires a transition to sustainable energy sources. It contributes to preserving the environment, reducing production costs, and increasing the economy's competitiveness. The transition to renewable energy sources opens space for new industries and investments. Energy efficiency is becoming a key factor for sustainable economic development and the competitive advantage of companies and countries. The goal of the forum in Banja Luka is to provide information to companies about the possibilities of saving electricity consumption and to present the latest technical solutions in the field of renewable energy sources. The event will also promote the possibilities of financing and improving the energy efficiency of the facilities of domestic companies and the implementation of projects related to renewable energy sources in the economy.

The Union of Employers of the Republic of Srpska

ACCREDITATIONS FOR THE EVENT

Representatives of companies who want to be informed about the agenda of the event and accredit can do so via the Internet presentation Banjaluka Energy Forum—Let's save energy at https://fair.unijauprs.org/

Photograph: Pixabay/Norbert Koch

Banjaluka Energetski Forum
UŠTEDIMO ENERGIJU

Četvrtak, 07.09.2023. u 9h
Ostrvo Stara Ada, Banja Luka

UNIJA POSLODAVACA REPUBLIKE SRPSKE

REPUBLIKA SRPSKA
MINISTARSTVO
PRIVREDE I PREDUZETNIŠTVA

08.30 – 09:00 Registracija učesnika

09:00 – 09:15 Pozdravni govor
- Saša Trivić, predsjednik Unije poslodavaca Republike Srpske
- Vojin Mitrović, ministar privrede i preduzetništva

09:15 – 09:30 Uvodničar – Keynote speaker: Miloš Zdravković, ekspert za energetsku efikasnost i ekologiju
- Trendovi i projekcije cijena energije
- Energetska stabilnost i energetska efikasnost – šta je do nas i šta možemo uraditi?

09:30 – 09:45 Riječ zlatnog sponzora – OPTIMA GRUPA: Industrijskom upotrebom KPG do ušteda
- Ekološke i ekonomske prednosti upotrebe komprimavanog prirodnog gasa
- Ponuda i konsalting

09:45 – 10:45 PANEL: energetska efikasnost – pozicija poslovne zajednice, šta i kako dalje?
- Zagovaračke pozicije poslovne zajednice
- Odnos prema ERS, regulatoru, distributerima…
- Cijene i kvalitet isporuke električne energije?

10:45 – 11:15 Pauza / Press

Show and Pit Stop

Tematska oblast I: Energetski audit i načini uštede

11:15 – 11:30 PREZENTACIJA 1: Implementacija energetskog menadžmenta, put ka uštedama energije
- Implementacije sistema energetskog menadžmenta
- Prednosti implementacije sistema energetskog menadžmenta
- Prezentacija metodologije Implementacija sistema energetskog menadžmenta

11:30 – 11:45 PREZENTACIJA 2: Modernizacijom industrijskih pogona do ušteda
- Kondenzatorska postrojenja za kompenzaciju reaktivne energije
- Sistemi za upravljanje industrijskim procesima

11:45 – 12:00 PREZENTACIJA 3: Uštede energije kroz unapređenja u izolaciji objekata

12:00 – 12:15 PREZENTACIJA 4: Energetski efikasna rasvjeta – primjeri iz prakse
- Ušteda električne energije korištenjem LED rasvjete prikazana na primjerima realizovanih projekata
- Sistemi inteligentne rasvjete i njihov način primjene

12:15 - 12:30 PREZENTACIJA 5: Kako uštediti energiju kroz unapređenja u grijanju, hlađenju i ventilaciji poslovnih objekata
- Odabir energetski efikasnih sistema grijanje, hlađenja, ventilacije
- Mogućnosti uštede energije u sistemima grijanja I hlađenja
- Potencijali rekuperacije/regeneracije toplote u sistemima ventilacije

12:30 – 12:45 PREZENTACIJA 6: Energetski transformatori i ušteda energije
- Energetski transformatori kao elementi prenosa električne energije
- AI, robotika, napredne vizualne i simulacijskih tehnologije
- Industrije 4.0 za male i srednje proizvodne kompanije

12:45 – 13:00 Pauza / posjeta štandovima / networking

Tematska oblast II: Solari – tehnička rješenja i regulativa

13:00 – 13:15 PREZENTACIJA 7: Prezentacija rješenja realizovanih projekata solarnih elektrana u regionu
- Tehnička rešenja i izazovi sa kojima su se suočavali projektanti i izvođači
- Način finansiranja projekata
- Isporuka i montaža solarnih panela; isporuka i montaža solarnih panela
- Upravljanje projektom i održavanje

13:15 – 13:30 PREZENTACIJA 8: Prezentacija rješenja realizovanih projekata solarnih elektrana u regionu
- Smjernice pri odabiru tehnologija i opreme na solarnim elektranama
- Tehnički i finansijski izazovi pri izgradnji solarnih elektrana i prevazilaženje izazova na primjeru realizovanih projekata
- Načini i opravdanost investicionog ulaganja u izgradnju solarne elektrane i rok povrata uloženih novčanih sredstava

13:30 – 13:45 PREZENTACIJA 9: Finansijski efekti implemetacije solarnih elektrana u kompanijama
- Visina ulaganja u solarne panele i period povrata investicije
- Mogućnosti zaštite od rizika (osiguranje)
- Mogućnosti finansiranja

13:45 – 14:00 PREZENTACIJA 10: Prezentacija opreme za solarne elektrane
- Paneli nemačke kompanije AE Solar
- Usluga od početka do kraja bez obzira na veličinu projekta i specifičnost zahtjeva

14:00 – 14:15 PREZENTACIJA 11: Uloga regulatora u provođenju ciljeva poboljšanja energetske efikasnosti – Regulatorne prepreke u implementaciji solarnih elektrana u kompanijama
- Regulatorni okvir dodjele koncesija
- Iskustva u implementaciji koncesionih projekata solarnih elektrana
- Naknada za balansiranje električne energije
- Kako do zelenih sertifikata

14:15 – 14:45 Pauza – ručak / koktel – networking – posjete štandovima

Tematska oblast III: Podrška i finansiranjeenergetske efikasnosti

14:45 – 15:00 PREZENTACIJA 12: Kako do kvalitetnog programa kreditiranja kompanije na polju energetske efikasnosti?

15:00 – 15:15 PREZENTACIJA 13: Mogućnosti međunarodnih donatora u realizaciji projekata
- Predstavljanje strateških prioritetita EBRD-a
- Podrška projektima savjetodavnih usluga u oblasti digitalizacije, energetske efikasnosti i obnovljivih izvora
- Podrška investicijama u opremu za automatizaciji i digitalizaciju koji približavaju preduzeća EU standardima i unapređuju energetsku efikasnost i produktivnost preduzeća

15:15 – 15:30 PREZENTACIJA 14: ESCO model finansiranja solarnih elektrana

15:30 – 15:45 Tematski osvrt I: Prirodni potencijali – mogućnosti i izazovi, geotermalna energija, litijum
- Geološka istraživanja obojenih i plemenitih metala na području BiH
- ESG i geološka istraživanja

15:45 Završetak događaja

Zlatni sponzor

Medijski sponzori:

Sponzori

NOXATEST

THE GREEN FUTURE OD DIAGNOSTICS

Not so long ago, we witnessed a global pandemic. In our country, the first case was recorded over three years ago. After that, the situation became more complicated and less clear every day. It was precisely that era when COVID-19 was an everyday topic that showed us how important quick and accurate diagnostics are.

Diagnostics, as a process that leads to the discovery of a disease, is the first step in the treatment process. About 13 million people die yearly because they do not get a timely diagnosis. Predictions are that in 2050, about 10 million people will lose their lives annually because antibiotics will no longer be available. This statistic is followed by another 40 million people who could be at risk due to the indirect consequences of missed procedures during the diagnosis of bacterial infections.

Noxatest is a project that aims to create a rapid diagnostic test, which should reduce the waiting time for results and allow doctors to choose the proper treatment method with these quickly obtained results as soon as possible. Behind this project stands a team of Jelena and Marko Komloš, who were determined to combine the knowledge gained during their studies and many years of experience.

The modern technology embodied in this project serves to identify numerous bacterial species and mechanisms of resistance to antibiotics faster and more precisely than before.

Photograph: Unsplash/Louis Reed

Noxatest is a project that aims to create a rapid diagnostic test that should reduce the waiting time for results and allow doctors to choose the right treatment method as soon as possible with these quickly obtained results

Marko Komloš
Noxatest

The project's creators start from the thesis that, no matter how powerful antibiotics are, microbes have evolved to be more resistant than them. Therefore, it is important to identify the mechanism of their resistance. At the same time, the project provides the opportunity to reduce stay in hospital precisely because of the efficient way of obtaining the necessary therapy.

The initial idea was to develop a rapid diagnostic test related to milk quality for dairy cows. We gave up on that idea because of the situation in agriculture, but that didn't stop us from developing an idea for something that would help people. The idea was born while I was working on a veterinary specialization in microbiology – explains Marko.

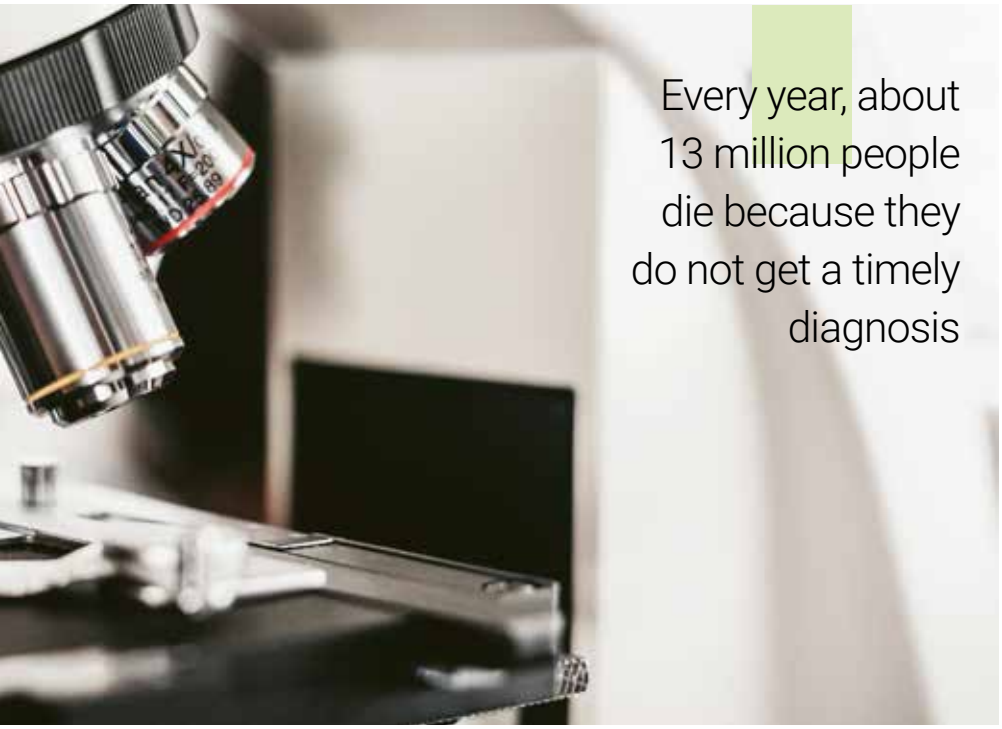
In addition to all the good sides, this project is also green because a product is being created that will be completely recyclable. Jelena and Marko made it for humans, as well as for animals and the alternative protein industry. In those industries, they reduce waste, thereby protecting the environment from creating negative effects. They reduce carbon dioxide production by using biodegradable materials and the low amount of energy required for production. A very important achievement is increasing the survival rate of animals on farms by more than 15 per cent, which would save more than 400 million animals per year.

This year, they were participants in the Generator ZERO program – where they enjoyed the entire selection process and the final event, during which they met many people. In addition to everything, the biggest thing they got was the media attention because they became recognizable. They were able to present the product at the Splet Tech conference, a very important event for the development of innovative entrepreneurship.

OTP bank, which is behind the Generator ZERO program and is one of the leaders of the green transition in the banking sector, became their partner and enabled them to develop the project, which will significantly help them finalize the product and position it on the market.

Without diagnostics, medicine would be based on assumptions instead of facts. It allows doctors to accurately identify diseases, adapt treatments to individual patient needs and monitor the effectiveness of therapies. Throughout history, diagnostics have shaped how we treat disease and fundamentally improved our ability to improve and extend people's lives.

Prepared by: Milica Vučković



Every year, about 13 million people die because they do not get a timely diagnosis

Photographs: Unsplash/Logan Moreno; (Komloš) courtesy of Marko Komloš

GREEN REVOLUTION CONFERENCE

An exciting time is ahead of us. In the coming month, on September 21, one of the most important business conferences—Green Revolution—will be held in Sarajevo. This event will take place as part of the "100 biggest" project and stands out as the "greenest" business conference in the region.

The Green Revolution conference will bring together leading experts and business people from Bosnia and Herzegovina and the wider region to jointly explore key topics, such as the importance of renewable energy sources, environmental protection, financing the green transition, circular economy, and sustainable development. This significant event aims to create fertile ground for innovative ideas and solutions that will enable progress towards a sustainable and greener future.

Today's world faces the challenges of exploitation of natural resources, the consequences of which are reflected in climate change, biodiversity and future generations. But now is the right time to move to the green road; with joint efforts, we can achieve positive changes.

The conference will host leading businessmen from BiH and the region, allowing them to hear inspiring lectures from the most respected experts in the field of sustainability, participate in dynamic panel discussions and establish valuable business connections.

This event represents an extraordinary opportunity for networking with leading businessmen from BiH who share the same values and vision of a sustainable future.

The Green Revolution conference will be held within the "100 biggest in BiH and the region" project, which has traditionally been organized by Poslovne novine for 36 years. This project highlights the business successes of more than 1,700 companies, ranked according to different criteria. Through this project, the best business examples are promoted to contribute to developing a positive business climate and highlight the largest companies.

The gala ceremony of the "100 biggest" project will be held on September 21, the same day when more than 450 regional leaders will gather at the Green Revolution conference. At this event, they will have the opportunity to exchange opinions and experiences, contributing to the common goal of sustainable development.

You can find more information about the project and the Green Revolution conference at www.100najvecih.ba.

Green Revolution

Illustration: Green Revolution

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100 NAJVEĆIH
U BOSNI I HERCEGOVINI
I REGIONU
2023

– KONFERENCIJA –

GREEN REVOLUTION

21.
SEPTEMBAR
2023., SARAJEVO

Poslovne novine

LRC BIS BUSINESS INTELLIGENCE SYSTEM

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Ministarstvo privrede Kantona Sarajevo

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KAKANJ CEMENT HEIDELBERGCEMENT Group

PORSCHE

bh

PRIVREDNA KOMORA REPUBLIKE SRPSKE

PRIVREDNA/GOSPODARSKA KOMORA FEDERACIJE BOSNE I HERCEGOVINE

SUSTAINABILITY AT THE CORE OF TETRA PAK'S STRATEGY

Global initiatives implemented by the Tetra Pak Company in sustainability and circular economy are also implemented in Serbia. From the procurement of electricity from renewable sources for the company's factory in Gornji Milanovac to supporting the development of new ways of using recycled packaging, the Tetra Pak team proves every day that sustainability is still a priority in decision-making and remains at the core of the company's strategy. According to the recently published 2022 Sustainable Business Report, Tetra Pak made significant achievements last year by reducing operational greenhouse gas (GHG) emissions by 39 per cent while using renewable energy by up to 84 per cent. In this way, the road to reaching zero net emissions in business by 2030 continues. The sale of 8.8 billion packages made from plant-based materials and 11.9 billion caps also made from the same material saved 131 kilotonnes of CO2 emissions.

The company has also invested around 30 million euros in expediting the collection and recycling of multi-layer cardboard packaging, collaborating with food technology incubators and startups to explore the future of sustainable food. In the Serbian market, the Gornji Milanovac factory was certified for using renewable electricity in 2020, which covers 100 per cent of the plant's electricity consumption. Since 2020, the factory's production process has also used packaging material produced from polyethylene obtained from renewable sources, i.e. sugar cane, which further increases the sustainability of the packaging. Through the support of projects related to smart recycling of used packaging in Kragujevac and Zrenjanin, Tetra Pak works locally to educate and motivate citizens, as well as local institutions, to introduce an adequate waste management system in practice in Serbia, which would allow a significantly larger amount of used materials to be kept in use longer and contribute to the development of the recycling industry while reducing additional pollution of the natural environment.

The sale of 8.8 billion packages made from plant-based materials and 11.9 billion caps also made from the same material saved 131 kilotonnes of CO_2 emissions

The company continues to work on finding sustainable solutions to the challenges facing society, believing that the global experience and know-how it possesses can be effectively applied in domestic circumstances as well.

Photograph: Tetra Pak

EMOBILITY

VOZIM NA STRUJU

Prof. dr Marko Luković

10th Symposium Emobility

Belgrade, Serbia
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