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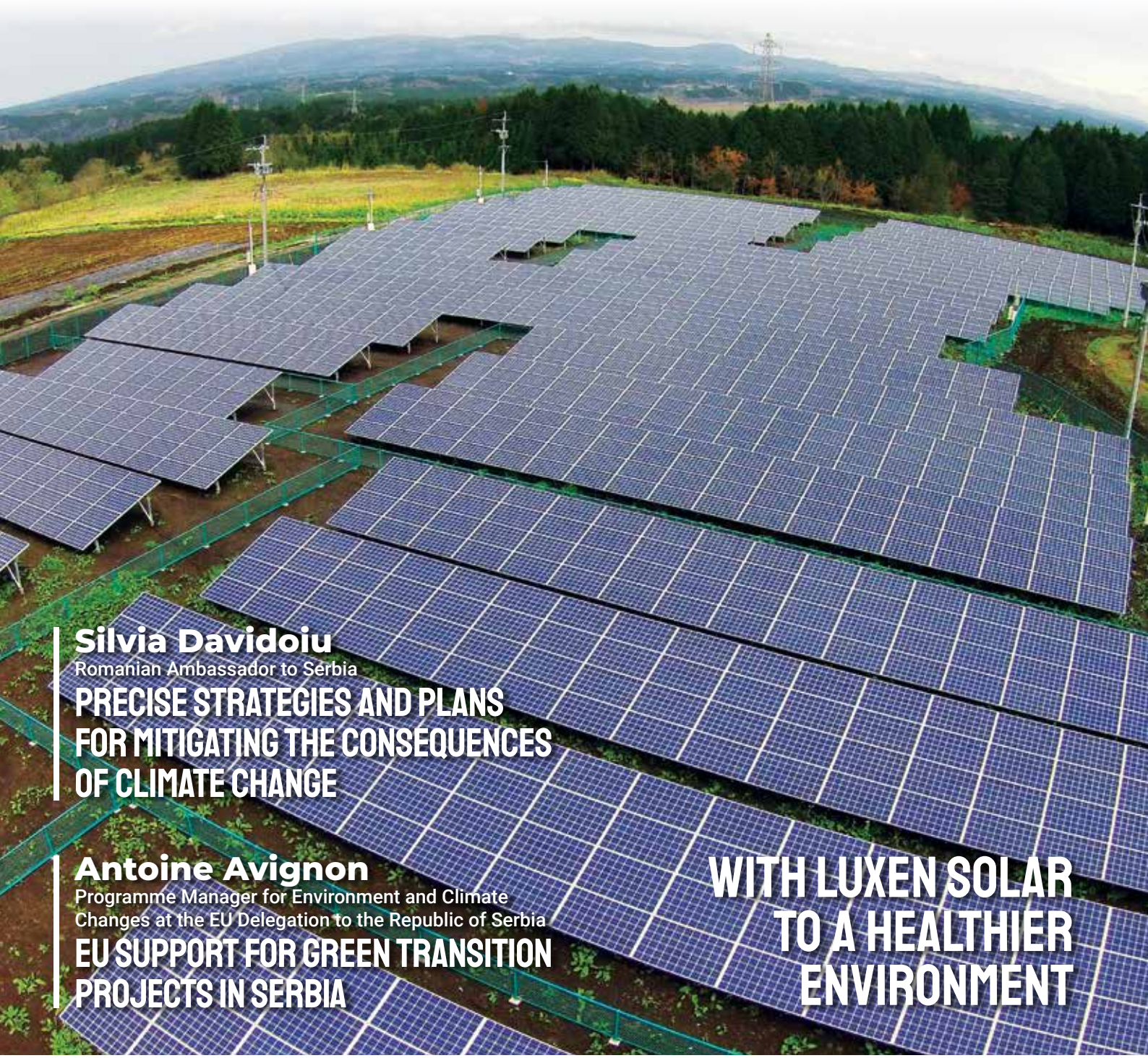

Silvia Davidoiu
Romanian Ambassador to Serbia

PRECISE STRATEGIES AND PLANS FOR MITIGATING THE CONSEQUENCES OF CLIMATE CHANGE

Antoine Avignon
Programme Manager for Environment and Climate Changes at the EU Delegation to the Republic of Serbia

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WORD OF THE EDITOR

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Dear readers,

Another issue of the Energy Portal Magazine is in front of you. This time, the theme is Nature Conservation with indispensable environmental protection, one of today's most critical challenges.

From the second half of the 20th century until today, the attitude towards the environment changed, and humanity began to place nature at the center of the value system, from which ecocentrism was born as a new perspective. From that time until today, numerous events have been recorded that were significant for the development of environmental protection. The text Development of Environmental Protection highlights the most important decisions, conventions and efforts made at the global level over many years.

Silvia Davidoiu, Ambassador of Romania to Serbia, told us more about EU funding programs that support the implementation of environmental protection policy in her country, compliance with directives and national plans, investments in renewable energy sources, how to deal with climate change, and finally more about the goals of sustainable mobility.

Regarding the European Union, its support reaches us in various forms – as technical assistance, support for drafting laws and policies, and, of course, concrete investments. Antoine Avignon, Program Manager of Environment and Climate Action in the EU Delegation in the Republic of Serbia explained how the EU Delegation supports the implementation of the green transition in our country.

Solar energy is an inexhaustible source for electricity production, with minimal environmental impact, which the citizens of some of our municipalities could soon confirm. Thanks to the companies B2 Nova Sun, B2 Sunspot and Elektroprivreda Srbije, which signed contracts on the purchase of electricity and assuming balance responsibility, the inhabitants of Nova Crnja in Banat and the citizens of Kikinda will soon receive two solar power plants.

On the other hand, the MT-KOMEX company built a solar power plant in Sisak-Moslavina County in Croatia, which further expanded its operations beyond Serbia's borders. In the text MT-KOMEX is building for the first time in the European Union, you will read about a comparative overview of construction in our country and on the territory of the EU.

When we talk about novelties in the field of electromobility, the company Charge&GO recently included new chargers for electric vehicles in its network and announced exciting plans for this year, especially for tourists who will go to the sea via North Macedonia in an electric car this summer.

In the People and Challenges section, read what enthusiasts and entrepreneurs are doing to spread awareness about the importance of a sustainable future, encourage citizens to change habits within the local community, and in what unique ways they are trying to change their attitudes towards environmental protection.

Numerous interesting texts and stories await you.

Nevena Đukić,
editor-in-chief

Photograph: courtesy of Nevena Đukić

IN THIS ISSUE...

Photographs: (first row) Danilo Mijatović; (third row from top to bottom) From the archives of the Ministry of Environment, Water and Forests Romania; Pixabay/Gerd Altmann; SET

ProCredit Bank

Photographs: (first row) Schneider Electric; (second row) Boris Erg; (third row from top to bottom) ProCredit Bank; MT-KOMEX

PRECISE STRATEGIES AND PLANS FOR MITIGATING THE CONSEQUENCES OF CLIMATE CHANGE

Biodiversity is particularly important for Romania because around 23 per cent of the country's surface is occupied by protected natural areas, which are part of the Natura 2000 network of protected areas in the European Union. Romania has over 30,000 hectares under UNESCO protection, more than 70,000 hectares of rainforest and 20.81 per cent of sea waters. At the same time, the longest stretches of the Carpathians and the Danube are also located on the Romanian national territory.

H.E. Silvia Davidoiu, the Romanian ambassador to Serbia, says that at the national level, Romania envisages clear policies and strategies that recognize the connection between mitigating the consequences of climate change, stopping biodiversity loss, reducing environmental pollution and improving environmental management.

The National Recovery and Resilience Plan (Component 4 – Sustainable Transport) introduces a series of measures that will lead to the scrapping of 250,000 EURO 3 or older vehicles by 2026 and the purchasing of 29,500 new electric vehicles by 2025

Photographs: From the archives of the Ministry of Environment, Water and Forests Romania

The Đerdap HPP project is an extraordinary example of transborder cooperation between our two countries for the efficient and sustainable management of the hydropower and navigation capacities on the Danube, as well as the protection of the environment in a particularly attractive area of the river

Silvia Davidoiu
Romanian Ambassador to Serbia

"Romania is fully committed to implementing the Paris Agreement and the 2030 Agenda objectives, in this respect adopting the Long-Term Strategy for Reducing the Greenhouse Gas Emissions- aiming to achieve climate neutrality by 2050. At the same time, we have increased our fight against plastic pollution, adopting the National Strategy and Action Plan for the transition to a circular economy to accelerate our transition to this model and increase waste management efficiency. In November last year, a nationwide Deposit-Return System was launched, the second largest system of this kind in Europe after Germany. We also have priorities in the forestry sector and, due to many problems encountered in the past, we are paying particular importance to the sustainable management of forests", says Ambassador Davidoiu and adds: "In this respect, an integrated Timber Tracking Information System (SUMAL) has been implemented; dedicated to the traceability of timber transport. This system is unique at the European level. Currently, a new version is under development, which will include the most recent technologies like satellite images, intelligent video cameras and LIDAR".

Q: What funding programmes does the EU support for implementing the environmental protection policy, and what amounts are involved?

A: We have the National Recovery and Resilience Plan (NRRP), a national programme for accessing reimbursable and non-reimbursable external funds from the European Recovery and Resilience Mechanism. At the national level, the Ministry of Environment, Waters and Forests coordinates reforms and/or investments for components such as water management, forests and biodiversity protection, waste management and investment, digitalization of the environment and a part of the component digital transformation. In this respect, the line ministry has launched or will launch, in the near future, a series of calls for projects with an estimated total budget of 2,654,300,000 Euros (reimbursable and non-reimbursable funds).

There are other EU programmes managed at the level of the aforementioned institution: projects implemented through the Large Infrastructure Operational Programme (POIM 2014-2020), to be phased through the Sustainable Development Operational Programme (2021-2027), with financing from the European Fund for Sustainable Development; Horizon Europe Programme – Call for Actions for the implementation of the Mission Restore our ocean and waters by 2030 and Programme for Environment and Climate Action (LIFE).

At the same time, the MEWF implements the Environment Programme in Romania as a Programme Operator in partnership with the Norwegian Environment Agency. The Environment, Adaptation to Climate Change and Ecosystems Programme is also being implemented and financed by the Financial Mechanism of the European Economic Area (EEA) 2014-2021. I would also

Photographs: (middle) From the archives of the Ministry of Environment, Water and Forests Romania; (Davidoiu) courtesy of Silvia Davidoiu

like to mention two other important projects: the Restore4Life project – Restoration of wetland complexes as life-supporting systems in the Danube Basin, financed by the Horizon Europe Programme, while our Ministry of Environment, Waters and Forests is a member of the consortium that implements the Net4LIFE project.

Q: What is the structure of energy sources in Romania? What is the share of RES, how much is invested in this area, and how will you increase the share of RES in the coming period?

A: Romania's energy sources are diversified, including traditional sources such as coal (18 per cent of the production capacity), oil and natural gas (15 per cent), and nuclear (8 per cent), as well as renewable energy sources (RES) like hydroelectricity (35 per cent), wind energy (16 per cent), solar energy (7 per cent), and biomass (1 per cent).

In Romania, renewable energy sources represent a significant part of the energy, with hydroelectric, wind and solar energy being the most developed and further new capacities being planned. For instance, in 2023, Romania increased its national energy production with 624 MW (496 MW solar, 72 MW wind and 56 MWg others), in addition to 1.000 MW of electricity from prosumers forwarded to the national power grid. To increase the share of energy produced from renewable sources, Romania is implementing a series of measures such as expanding existing renewable energy capacities by constructing new wind farms, solar parks, and hydroelectric plants; stimulating private

In 2023, Romania increased its national energy production with 624 MW (496 MW solar, 72 MW wind and 56 MWg others), in addition to 1.000 MW of electricity from prosumers, which has been forwarded to the national power grid

Photographs: From the archives of the Ministry of Environment, Water and Forests Romania

investments in renewable energy projects through financial support programmes, favourable tariffs, and tax incentives; improving infrastructure for connecting renewable energy sources to the grid to facilitate their efficient integration into the national energy system and promoting research and development of innovative technologies in the field of renewable energy to reduce costs and improve the efficiency of these sources.

Q: What environmental protection programmes are you implementing and what are the plans for the development of hydropower plants on the Danube?

A: As far as the environmental protection on the Danube goes, particularly in connection with the Iron Gates/Djerdap hydropower plants, I would like to mention the WE PASS project. This project aims to find solutions to ensure fish migration upstream and downstream of the Iron Gates I and II dams. On the other hand, in Romania, certain projects are under development for sturgeon conservation and protection, reducing water pollution from urban agglomerations and reducing the diffuse pollution from agricultural sources.

The Đerdap HPP project is an extraordinary example of transborder cooperation between our two countries for the efficient and sustainable management of the hydropower and navigation capacities on the Danube, as well as the protection of the environment in a particularly attractive area of the river. Our cooperation on environmental protection of the area is developing under the Espoo Convention (1991) and the Bucharest Agreement (2028).

Q: What is the air quality like in Romania?

A: Romania has a National Air Quality Monitoring Network consisting of more than 180 monitoring stations throughout the country. It is administered by the Ministry of Environment, Waters, and Forests and is responsible for obtaining information on ambient air quality and informing the public about it.

Real-time monitoring data on the air quality in urban areas are published on the platform https://www.calitateaer.ro/. Like many other European states, an important issue faced by our country in the field of air quality is the high level of particulate matter, especially in the atmosphere of some urban areas, the main cause being traffic, construction sites and residential heating. Exceeding the limit values for the particulate matter was recorded in large urban agglomerations such as Bucharest, Timişoara, Cluj Napoca, Constanța counties, etc.

Local authorities are drawing up air quality plans to redress this situation in zones and agglomerations where the exceedance of limit values pollutant concentrations in legislation in the air quality field. As a national measure to combat atmospheric pollution, the National Air Pollution Control Programme (NAPCP) was developed, and through it, measures were established to reduce anthropogenic emissions of atmospheric pollutants.

Q: What are you doing to reduce greenhouse emissions, and how do you deal with climate change in your country?

A: Romania has developed several general strategies and implementation plans to fulfil its international commitments. These range from national policies targeting broad reductions in GHG emissions to narrower frameworks targeting specific sectors such as the Integrated National Plan for Energy and Climate Change 2021–2030 which is currently under review, taking into account the new targets agreed upon under the energy files of the Fit for 55 package; the National Recovery and Resilience Plan covers the ecological transition that should be supported by reforms and investment in green technologies and capabilities, including biodiversity, energy (e.g. phasing out coal from thermal power plants by 2032), building renovation and circular economy and the 2022–2030 National Intelligent Transport Systems Strategy, which is based on the gradual reduction of the global impact of polluting emissions from transport.

We also have the National Forest Strategy 2030, as well as the long-term National Renovation Strategy, which aims to support the renovation of residential and non-residential buildings, both public and private, and their gradual transformation into a real estate park. The National Hydrogen Strategy and the Action Plan aim to develop a clean hydrogen industry at an affordable price.

Q: How is waste management regulated in Romania? How much does Romania adhere to the EU Landfill Directive? What are the priority actions related to waste management that Romania should implement?

A: The EU Landfill Directive mandates strict guidelines on how waste is treated before it is landfilled, the types of waste that can be landfilled, and the technical requirements for landfill sites. Before accession, Romania was expected to prepare an implementation plan and to request compliance with the Directive's terms through transition periods. During the negotiations, Romania earned the best transitory periods for the Landfill Directive.

Romania adopted and implemented the National Waste Management Plan that aligns with EU targets, focusing on reducing biodegradable waste landfilled, improving waste collection and treatment infrastructure, and increasing recycling rates. The EU Directive on Landfills has been fully transposed into the national legislation, and the National Environmental Guard verifies compliance with the legal provisions. Considering the latest trends and challenges at the EU level, our priority actions in waste management would encompass enhancing recycling infrastructure and services, promoting public awareness and participation, supporting circular economy initiatives, improving waste collection and management in rural areas, and using EU/international funds.

Q: How did you define the sustainable mobility goals, and how did you adapt to the new sustainable form of transport in Romania?

A: We have established the sustainable mobility goals in national policy documents, such as Romania's Sustainable Development Strategy 2030, sectoral strategies on transport, and the National Recovery and Resilience Plan.

Through its Environment Fund Administration, our Ministry of the Environment, Waters and Forests applies measures for the gradual removal of used internal combustion vehicles and the renewal of the car fleet. We also developed a programme for reducing greenhouse gas emissions in transport by promoting non-polluting and energy-efficient road transport vehicles.

Pursuing those goals, we have introduced in The National Recovery and Resilience Plan (Component 4

Photographs: From the archives of the Ministry of Environment, Water and Forests Romania

– Sustainable Transport) a series of measures that will lead to the scrapping of 250,000 EURO 3 or older vehicles by 2026 and the purchasing of 29,500 new electric vehicles by 2025. Romania plans to develop its national infrastructure of alternative fuels for road vehicles, particularly by installing charging stations by mid-2026 through the National Recovery and Resilience Plan.

Q: What else awaits Romania on the way to a completely ecological state? What are the biggest challenges to further green transformation?

A: Measures to significantly reduce GHG emissions and improve GHG absorption/capture at the sectoral level are essential and should be applied nationally. Meeting the objectives and targets set out in the STL will boost the competitive environment in the six key areas: electricity generation, industry, transport, heating and cooling in the buildings sector (residential and commercial), agriculture, waste, land use, land-use change and forestry (LULUCF). Buildings and road transport would require careful consideration, stakeholders' engagement, and the design of appropriate regulations and mechanisms, as emissions from these sectors have a positive trend in later years. Additionally, emissions from agriculture are also a topic that we see a need to look into, even if emissions there are harder to abate than in other sectors.

The National Recovery and Resilience Plan a series of measures that will lead to the scrapping of 250,000 EURO 3 or older vehicles by 2026 and the purchasing of 29,500 new electric vehicles by 2025

Romania will have to take steps forward in developing the transport infrastructure for CO_2, capturing carbon through an energy-intensive industry, eliminating CO_2 from the atmosphere, and using captured CO2 as a primary resource in the industrial field as a raw material for industry.

Interview by Mirjana Vujadinović Tomevski

IMPROVING ENVIRONMENTAL PROTECTION IN SERBIA

Solving environment-related problems and protecting the environment are still the top priorities and challenges for both people living in the Republic of Serbia and state institutions. In 2023, the Ministry of Environmental Protection, together with local governments and partners, worked on solving these problems, primarily those related to improving air quality, waste management, and protecting natural habitats.

The 2022-2023 Air Protection Program in the Republic of Serbia determined the total costs related to its implementation, which are approximately 2.6 billion euros. This program was adopted in December 2022, together with the Action Plan covering the period from 2022 to 2026. It will cost around 2.1 billion euros to implement.

In February 2023, the Ministry launched a competition to replace boilers and individual fire pits, while in September of the same year, it launched another public call for the replacement of boilers in heating plants and public institutions, to which it allocated additional financial resources. According to the Minister of Environmental Protection, Irena Vujović, a total of 27 cities and municipalities benefitted from the first tender. In contrast, funds for projects in 12 local governments were provided via the second tender.

"With the implementation of the projects from the second tender, coal and fuel oil boilers in 14 elementary schools, two preschools, two municipal administration buildings, three health centers and one cultural centre will be replaced by boilers that use more environmentally friendly energy sources", specified the Minister.

Photograph: Unsplash/Nikola Knežević

To improve air quality and combat climate change, on June 1, the Government adopted the Low Carbon Development Strategy of the Republic of Serbia for the period from 2023 to 2030 with projections until 2050. Adopting this Strategy is prescribed by the Law on Climate Change to determine strategic directions of action and public policies for reducing greenhouse gas emissions in the entire economy. In late 2023, the Government also adopted the Program for Adaptation to Changed Climate Conditions from 2023 to 2030, which prescribes the process of adaptation to such conditions systematically and based on scientifically based results on climate change in Serbia. The Program includes an analysis of eight-month climate changes and future climate change scenarios. The Action Plan covering the period from 2024 to 2026 was adopted under the Program's auspices, which contains 25 measures, as well as the financial, institutional and time frame for their implementation and monitoring.

As another measure to improve air quality, the Government passed the Regulation on the subsidized purchase of electric and hybrid vehicles, and the Ministry subsequently allocated subsidies in March.

Improving waste management for better air quality and a cleaner environment

Unregulated landfills are a challenge and problem that people across Serbia live with daily. To solve this problem, 30 local governments proposed projects to prevent illegal waste dumping in 2023 and subsequently received funding. The action lasted until September 15, and as a result, more than 170 such locations were cleaned.

Also, in 2023, unsanitary landfills in Ruma, Požega and Zrenjanin were closed and rehabilitated.

In July, the contract for constructing the state-of-the-art regional waste management center called Eco Tamnava, located in the village of Kalenić in the Ub municipality, was signed, followed by construction in October. After the project is finished, the problem with waste management in 15 locations will be systematically solved. Transfer stations, recycling centers, a biological waste treatment plant, and other supporting infrastructure will be built as part of the project.

ALLOCATED FUNDS FOR PUBLIC CALLS

In February 2023, a tender was launched, stipulating the allocation of 220 million dinars for co-financing the replacement of boilers, 170 million dinars for co-financing the replacement of individual fireplaces, and 100 million dinars for afforestation. Local governments were invited to apply. An additional 120 million dinars were allocated via the second Public Call, launched in September.

Photograph: Unsplash/Milica Spasojević

A vital planning document, the Sludge Management Programme in the Republic of Serbia, was adopted for the first time in Serbia last year. It covers the period from 2023 to 2032 and aims to establish a safe, sustainable, and cost-effective sludge management system for municipal wastewater treatment plants.

Regarding the construction of the missing sewage grid, relevant work was carried out last year in Niš, Pećinci, Gornji Milanovac, Boljevac and Raška. The construction of approximately 140 kilometers of the sewage grid is expected to be finished by the end of 2024 and 2025, respectively, depending on the location.

Preserving natural habitats

In 2023, several significant decisions were made regarding preserving natural habitats. Following the Ministry's consent, Vardenik, located in Vlasina and Krajiste, was declared an Exceptional Characteristics Area. Then, the Decree on the expansion of the total area of the Special Nature Reserve Uvac by about 4,000 hectares was adopted, followed by two natural monuments in Dubočka Pećina being declared protected areas – Gaura Mare in the municipality of Kučevo and Vražji Kamen-Prosečnik in the municipality of Trgovište. The Government also passed the Decree declaring Potamšje as an Exceptional Characteristics Area as a category I natural asset, i.e. a natural asset that has international, national and exceptional importance.

In March, the Line Ministry and the United Nations Development Program (UNDP) launched an initiative to protect Serbia's wetlands better and preserve their flora and fauna diversity.

Furthermore, the Ministry of Environmental Protection and the Association of Serbian Banks signed

EKO TAMNAVA – THE BIGGEST GREEN PROJECT IN SERBIA

The largest regional waste management centre in Serbia will treat 260,000 tons of waste using the latest technology, which is generated annually in 15 cities and municipalities – Ub, Valjevo, Osečina, Lajkovac, Mionica, Ljig, Koceljeva, Vladimirci, Barajevo, Lazarevac, Obrenovac, Loznica, Krupanj, Ljubovija and Mali Zvornik.

Photograph: Pixabay/Dinh Khoi Nguyen

a Memorandum of Cooperation stipulating the implementation of projects that will improve protected areas and preserve biodiversity in the Republic of Serbia.

A total of 355 million dinars for 89 protected areas were allocated in 2023. Also, contracts were signed with managers of protected areas to whom funds were allocated for the co-financing of the Protected Areas Management Programme, as well as contracts with local governments stipulating the allocation of funds for afforestation and implementation of projects to preserve and protect biological and geological diversity in protected areas on their territories.

Investments continued in 2024 too

Earlier this year, the Ministry launched four public tenders which allocated a total of 1.25 million dinars for environmental projects in cities and municipalities, namely for the replacement of boiler rooms in heating plants and public institutions, fireplaces in households, afforestation, expanding green areas and eliminating illegal landfills. The Regulation on the conditions and method of implementing the subsidized purchase of new electric vehicles was also adopted, with 170 million dinars allocated for this purpose. Five hundred million dinars have been provided as the co-financing of the programme for managing protected natural assets of national importance, the largest amount granted so far.

As announced, the implementation of the large-scale project of upgrading and modernizing the Srem-Mačva regional waste management centre will soon begin. Furthermore, a contract was signed in Bečej stipulating the expansion and modernization of the wastewater treatment plant there. Some of the agreements signed in 2024 stipulate the closure and rehabilitation of three unsanitary landfills in the municipalities of Topola and the cities of Subotica and Prokuplje.

Prepared by Katarina Vuinac

Photograph: Pixabay/Anton Lukin

DEVELOPMENT OF ENVIRONMENTAL PROTECTION

Humanity's contemplation about its negative impact on nature has left a written trace dating back several centuries. Yet, at that time, there was not enough knowledge about the extent to which such an attitude towards the environment could lead. More serious environmental awareness and protection development required humanity to realize another important moment – humans are not alone on this planet. This was the moment when man's consciousness became imbued with concern for other beings, thus abandoning the exclusive concern for the survival of the human species. Even today, we can't say with certainty that that moment has been fully experienced, but we can confirm that the 1960s marked the beginning of humanity's progress from anthropocentrism to ecocentrism. There are countless ups and downs in the human relationship with nature that have been recorded from that time to date. Below, we present some of the moments that were significant for the development of environmental protection for all living beings.

The founding of the WWF and the revolutionary Silent Spring

The early 1960s saw the formation of the World Fund for Nature (WWF) as an international non-governmental organization that aimed to provide financial resources to help protect the natural environment and biodiversity threatened by human development and activities. According to many, an American zoologist and biologist, Rachel Carson, occupied a special

Photograph: Pixabay/Umarseehar

More serious environmental awareness and protection development required humanity to realize another important moment – humans are not alone on this planet. This was the moment when man's consciousness became imbued with concern for other beings, thus abandoning the exclusive concern for the survival of the human species

place in the silent birth of the environmental revolution, who expressed her love for nature through writing. Although books from the earlier decades were also notable, the one that made the strongest impact was 1962's Silent Spring. The author showed courage to write about a topic beyond her time, thus pointing out the dangers of DDT (a type of insecticide) in the living world. Her work later led to a ban on using this insecticide in the United States for agricultural purposes. Still, more importantly, it raised awareness and instilled courage to protect nature from pollutants. Another important moment in this decade, in terms of the conservation of the living world, happened in 1964 when the International Union for Conservation of Nature (IUCN) was founded, known for the Red List of Endangered Species it publishes, which contains the most comprehensive information on status and risk from the extinction of species.

Stockholm Declaration and Earth Day

The first observance of Earth Day on April 22, 1970, opened the door for important events in the next decade. On that day, approximately 20 million people in the United States participated in events that took place in tens of thousands of locations across the country. Twenty years later, Earth Day officially became a global day, when on April 22, 1990, about 200 million participants in more than 140 countries worldwide took part in marking this day. Two years later, the first global conference was held in Stockholm with the issue of the environment as

Photograph: Unsplash/Chris LeBoutillier

the main topic – the United Nations Conference on the Human Environment. Several important decisions were made at this event – the famous Stockholm Declaration and the Environmental Action Plan were adopted. The declaration laid down 26 principles for preserving and improving the environment, focusing on the need for international cooperation in this matter.

As a result of the Stockholm Conference, the United Nations Environment Program (UNEP) was established, which, thanks to its long-standing work with governments, civil society, the private sector, and other UN bodies, is dedicated to resolving the most urgent environmental problems. Although the Club of Rome, an international organization made up of experts from various fields, was formed in 1968 to study and promote sustainable development policy, it is listed chronologically in this part of the article. Namely, in 1972, the Club of Rome published its famous report called The Limits to Growth, which analyzed current trends and gave projections related to population growth while also presenting worrying information that indicated that the planet Earth, with its organized resource capacity, would not be able to keep up with such human population growth and needs for using resources. The report could be described as a catalyst for developing awareness about the need to apply sustainable development principles.

Two more important events that marked the 1970s are the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) from 1973 and the Convention on Transboundary Air Pollution (CLRTAP) from 1979. The CITES convention was signed by 184 countries

Photographs: (top) Unsplash/Kalen Emsley; (bottom) Unsplash/Renaldo Matamoro

Earth Day officially became a global day when, on April 22, 1990, about 200 million participants in more than 140 countries worldwide took part in marking this day

and was adopted to ensure that international trade in plants and animals did not threaten their survival in the wild. The main reason for the CLRTAP Convention was people's growing dissatisfaction due to the harmful effects of acid rain in Europe. As the first regional convention related to environmental protection, it entered into force in 1983 to reduce pollution from the biggest polluters in Europe and North America. Since its adoption, it has been expanded with several Protocols specifically targeting pollutants such as nitrogen oxide, ammonia, toxic heavy metals, sulfur, and others. Over the years, the Convention has seen significant success in reducing pollutant levels. Official data collated by the United Nations Economic Commission for Europe (UNECE) show that between 1990 and 2006, carbon dioxide levels fell by 70 per cent in the European Union and by 36 per cent in the United States, while in the same period, the PM 10 particle levels were reduced by 28 per cent in the European Union.

Defining the term 'sustainable development'

The 1980s were marked by several crucial moments. One of the most used definitions of sustainable development was presented during this period. Namely, the report called Our Common Future, also known as the Brundtland Report, published in 1987 by the World Commission on Environment and Development (WCED), defined the term and contributed to its dissemination. At the same time, this became one of the most important documents in international policy regarding sustainable development. The sustainable development definition says that this is the development that meets the needs of current generations without jeopardizing the ability of future generations to meet their needs. In the same year, the Montreal Protocol was completed,

Photograph: (top) Unsplash/Kanenori

a global agreement on protecting the ozone layer by gradually eliminating the production and use of substances that damage the ozone layer (ODS).

At the same time, this is the first treaty ratified by all countries in the world. In 1988, UNEP and the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC), which is known for its comprehensive reports that assess the state of scientific, technical and socio-economic knowledge about climate change, its impact and future risks, as well as ways to slow it down. Furthermore, there are specific reports on topics agreed upon by member governments and, finally, methodological reports, which provide guidelines for identifying, measuring, and monitoring greenhouse gas emissions.

The Paris Agreement and Agenda 21

In 1990, the European Union established the European Environment Agency (EEA), which became operational in 1994. The EEA was created to provide verified and independent information regarding the state of the environment in Europe, both to decision-makers and the public. The 1990s saw several other critical moments. The United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, was held in 1992 in Rio de Janeiro on the occasion of the 20th anniversary of the aforementioned first United Nations Conference on the Human Environment, held in Stockholm. The conference saw the participation of political representatives, scientists, media professionals and non-governmental organizations from 179 countries. UNCED is responsible for the creation of several essential documents. The first is Agenda 21, which contains a programme for sustainable development activities for the 21st century. The Rio Declaration on Environment

According to many, an American zoologist and biologist, Rachel Carson, occupied a special place in the silent birth of the environmental revolution, who expressed her love for nature through writing

Photographs: (top) Unsplash/Gabriel Jimenez; (bpttom) Unsplash/Raden Eliasar

and Development is perhaps the most important achievement of UNCED. It prescribes principles as guidelines for future sustainable development. The document also states that the only way to achieve long-term economic progress is to link it with environmental protection. The United Nations Framework Convention on Climate Change (UNFCCC) is another important event at the Conference. UNFCCC is known for its goals, namely the stabilization of greenhouse gases at a level that would prevent negative anthropogenic impacts on the climate system. We should also mention the Convention on Biological Diversity, the Declaration on the Principles of Forest Management, and the creation of the Commission on Sustainable Development.

The first United Nations Conference on Climate Change (COP) was held in 1995 in Berlin. All countries that joined the mentioned UNFCCC meet yearly to assess progress and discuss climate change. Before highlighting COP 21 as one of the most famous COP conferences, we should first note the Kyoto Protocol of 1997. Aiming to significantly reduce greenhouse gas emissions by developed countries, the Kyoto Protocol sets appropriate goals and mechanisms. It entered into force in 2005, and it was the first agreement that made it an obligation to reduce these emissions. After the first period of commitments expired in 2012, its importance also ceased because some of the largest economies, such as the United States, did not further accede to the agreement and thus refused to accept new obligations. Although it had certain limitations and failures, its importance is reflected in the fact that it was the basis for important agreements reached later. One of them is the Paris Agreement, adopted at COP 21 in Paris, which is a legally binding international agreement on climate change adopted by 196 countries. Its key objective is to keep average temperature increases below 2°C above pre-industrial levels, with continued efforts to limit temperature increases to 1.5°C. To this day, this goal remains one of the most important goals related to climate change and global warming.

The EEA was created to provide verified and independent information to decision-makers and the public about the state of the environment in Europe

The issue of environmental protection has now made it to the top. Almost every day, important decisions are made worldwide to improve this protection – from the measures implemented by the European Union and the adoption of the Kunming-Montreal Global Biodiversity Framework in 2022 to the High Seas Treaty from 2023 or the UN Water Conference in 2023, which has been in the making for several decades. However, we chose the 2030 Sustainable Development Agenda, adopted by the United Nations in 2015, for the end of this article. By determining the famous 17 Sustainable Development Goals (SDGs), the Agenda sets out a plan for peace and prosperity for people and the planet, for the present and the future, calling on all countries to take urgent action. Accomplishing the set goals is still a challenge for humanity today.

Prepared by Katarina Vuinac

Photograph: (middle) Pixabay/Satheesh Sankaran

GREEN KILOWATTS FOR THE SUPPLY OF 10,000 HOUSEHOLDS

The companies B2 Nova Sun, B2 Sunspot, and Elektroprivreda Srbije, a joint stock company, signed electricity purchase and balance responsibility contracts for two solar power plants.

B2 Nova Sun – Nova Crnja in Banat and B2 Sunspot – Kikinda are the first solar power plants with whom EPS signed these contracts based on auctions conducted by the Ministry of Mining and Energy.

Both solar power plants signed 15-year agreements on the purchase of electricity and the assumption of balance responsibility in trial and permanent operation.

– The purchase and balancing price is determined by market principles. This energy will provide additional security for the operation of our power system and supply for citizens and businesses. It will be sufficient to supply about 10,000 households – said David Žarković, Executive Director for Energy Portfolio Management at EPS JSC.

Elektroprivreda Srbije is a reliable partner for all companies that have decided to increase the share of energy from renewable sources in Serbia's energy mix through market

Both solar power plants signed 15-year agreements on the purchase of electricity and the assumption of balance responsibility in trial and permanent operation

Photographs:(top) MT-KOMEX; (bottom) Danilo Mijatović

The solar power plant B2 Nova Sun, with a connection power of 9.9 MW, is being built on a plot in the industrial part of Nova Crnja

premiums auctions. With the investors who participated in the auctions and other independent producers in Serbia, we already have more than one GW of installed capacity from renewable sources, more than 10 per cent of Serbia's production capacity. With slightly more than 30 per cent of EPS production from the hydro sector, we are already rapidly approaching 50 per cent production from renewable energy sources.

The solar power plant B2 Sunspot is located in the non-building area of the city of Kikinda, at the location of the former landfill. This makes this project exceptional because it is the first power plant in the region to be built on a reclaimed old landfill, which is given a new use with this investment. The planned connection power of this power plant is 7 MW.

The solar power plant B2 Nova Sun, with a connection power of 9.9 MW, is being built on a plot in the industrial part of Nova Crnja, right next to the former Sugar Factory. This investment completes the Municipal Plan on the Promotion of Renewable Energy Sources.

Miloš Kostić, director of the companies B2 Nova Sun and B2 Sunspot, says that the electricity purchase contracts with Elektroprivreda Srbije are a continuation of the previously signed market premium contracts also concluded with this joint-stock company. A price of 89.7 euros per MWh was accepted for both solar power plants.

Both power plants have obtained building permits and signed turnkey construction contracts with the company MT-KOMEX. All the necessary equipment has been purchased for both power plants, and construction is underway.

– In Nova Crnja, the works are slowly coming to an end, and when it comes to the power plant in Kikinda, it is estimated that 40 per cent of the works have been completed – Kostić said, adding that the solar power plant in Kikinda is expected to be connected to the grid at the beginning of May.

The total annual production of these two solar power plants will be 25,000 MWh. The power plants were financed partly from investors' funds, while the other part was financed from loans from two banks. Kostić pointed out that despite the large number of requests and interests of other investors, obtaining all necessary permits went as expected, stressing that all procedures were started on time. He adds that they are continuing their investments in this way; last year, they put into operation the Delasol power plant in Lapovo, with a capacity of 9.9 MW. This is the natural follow-up of the company – as a domestic investor, to increase the share of renewable sources in the energy sector of the Republic of Serbia.

The solar power plant B2 Sunspot is located in the non-building area of the city of Kikinda, at the location of the former landfill

Prepared by Milica Radičević

Photographs: MT-KOMEX

EU SUPPORT FOR GREEN TRANSITION PROJECTS IN SERBIA

The European Union launched the European Green Deal, paving the way for a comprehensive approach to green in all sectoral policies. The Green Deal was extended to the Western Balkans in the form of the Green Agenda, which was adopted by all the countries of the region. The Deal's priorities are decarbonization, the fight against pollution, biodiversity, circular economy, and food systems. The EU provides support in various forms – technical assistance to ministries when drafting laws and policies, investments, especially in wastewater treatment plants and waste centers and assistance with policy dialogues, including attracting public attention through various public events and the

> The very process of European integration is a process through which Serbia becomes green

Photographs: (top) Unsplash/Karsten Wurth; (bottom) Unsplash/Harry Shelton

> The data on the emission of harmful gases show that the biggest source of sulfur and nitrogen oxides and suspended particles is fuel combustion, which happens during electricity and heat production

media. The Green Agenda for Serbia project successfully supports green innovations pilot projects.

We spoke with Antoine Avignon, Programme Manager for Environment and Climate Changes at the EU Delegation to the Republic of Serbia, about how they support the processes of green transition, whether we are doing enough on implementing mechanisms to reduce harmful gas emissions, the legal framework for the adoption of the National Energy Climate Plan in Serbia (NECP) and facilitating education and the development of awareness about environmental protection.

Q: In what other ways does the EU Delegation support implementing the green transition in Serbia?

A: The very process of European integration is a process through which Serbia becomes green. To help Serbia become green, the European Union has invested 582 million euros in environmental protection. Thanks to our projects related to gas pipelines, there will be less harmful emissions and less polluted air. The EU supports Serbia in achieving its own environmental protection and climate action goals to gradually raise them to the EU level while boosting the awareness of individuals, the private sector, and the media. The most important results of this support to Serbia are constructing wastewater treatment plants in Subotica, Šabac, Leskovac, Kula, Vrbas, Raška, Niš, Kraljevo, Brus and Blac. The support also includes renovating the water supply system in Požarevac, Inđija, and Petrovac na Mlavi. Also, a water supply system was built from the ground up in Veliko Gradište. The EU financed the ash disposal system and the installation of the filtration system at the Nikola Tesla TPP. Equipment for monitoring the emission of harmful substances has also been installed in TENT A and B and Kolubara TPP. Regional landfills were built in Pirot, Užice, Sremska Mitrovica, Šabac and Subotica. A medical waste management system has also been developed. The first regional sanitary landfill in Duboko was opened thanks to EU assistance. It now serves nine municipalities in western Serbia and stores 80,000 tons of waste annually. The EU financed the flood defense system in Šabac with 10 million euros. In Subotica, the Delegation funded the construction of a modern Regional Waste Management Centre with 20.3 million euros.

ANTOINE AVIGNON was born in Paris and spent part of his childhood in the French Alps, where he studied alpine fauna and flora, before moving to Toulouse, where his passion for diplomacy and international development continued to grow. In 2003, he moved to Africa to work on an extensive portfolio of infrastructure, water/sanitation and wildlife conservation. He moved to Albania in 2009 to work on EU accession, particularly on EU Chapter 27 (Environment and Climate Change), where he initiated several important projects. Since 2017, Mr Avignon has been working in the EU delegation in Serbia, where he has been in charge of the portfolio of environmental and climate actions. His activities include maintaining political dialogue with Serbian authorities, making programme investments, participating in donor coordination, and launching the Green Agenda for the Western Balkans.

Photograph: (Avinjon) courtesy of Antoine Avignon; (bottom) Unsplash/Possessed photography

Q: Is enough being done to implement mechanisms to reduce harmful gases in Serbia? How are we progressing towards reducing greenhouse gas emissions by 50 per cent by 2030?

A: The data on the emission of harmful gases show that the biggest source of sulfur and nitrogen oxides and suspended particles is fuel combustion, which happens during electricity and heat production. At the same time, road traffic contributes to emissions to a lesser extent. The EU also financed the installation of 28 measuring stations and instruments for automatic monitoring of air quality. In February 2020, when air pollution in Serbia was above permissible limits for days, the EU supported Serbia in taking action and addressing this issue to prove how the European integration process can be helpful by offering expertise, examples of good practices, and investments. The emission of particles into the air above Obrenovac and its surroundings has been reduced by as much as six times.

Q: The Rulebook on the Detailed Content and guidelines for Determining the National Goals of the Integrated National Energy and Climate Plan (NECP) was approved. Is there a sound legal framework and legislative system for adopting the NECP?

A: The Law on Energy lays a good foundation for the drafting and adopting the NECP. We provided technical assistance over four years to prepare and develop the first NECP that covers the period until 2030. This is a highly demanding and challenging process for countries that rely on fossil fuels and traditional inefficient energy use. Serbia has numerous other opportunities, technologies, and policies at its disposal that could diversify energy sources, bring additional renewable energy, and reduce consumption. It is essential to point out that the lower ambitions of the Serbian NECP are to achieve climate neutrality by 2050 and even by 2030 in terms of renewable energy sources and energy efficiency.

GREEN FUND IN SERBIA

Although Serbia has substantially increased investments in environmental protection, the Green Fund is still not fully operational. “A well-designed and well-managed Green Fund could simplify responsibilities, accelerate and increase investments and create new investment opportunities,” says Mr Avignon.

We are following this process. We will help Serbia increase its targets during the implementation and reporting of the NECP in the coming years. Next year, Serbia should finalize and adopt the NECP, following the energy and climate goals of the Energy Community covering the period until 2030, considering the recommendations of the Energy Community Secretariat and the energy sector.

Photographs: (top) Unsplash/Fons Heijnsbroek; (bottom) Unsplash/Ivan Bandura

To help Serbia become green, the European Union has invested 582 million euros in environmental protection

PRIORITIES OF THE EUROPEAN GREEN DEAL

Mr Avignon says that one of the top priorities of the European Green Deal is the aspiration for Europe to be the first climate-neutral continent. European Green Deal will transform the EU into a modern, resource-efficient and competitive economy, ensuring net zero greenhouse gas emissions by 2050.

Q: Are we doing enough to reduce the use of fossil fuels? How can we achieve the best possible use of energy?

A: Higher investments in renewable energy sources (RES) are vital to decarbonizing the energy sector. We support these investments through the Investment Framework for the Western Balkans and IPA funds. These include investments in the Kostolac wind power plant (30.6 million euros thanks to the KfW grant), the reconstruction of the Vlasina hydropower plant (the EBRD grant, 15.4 million euros), and the reconstruction of the Bistrica hydropower plant (the EIB grant, 8.1 million euros).

Q: How can we facilitate better education about environmental protection? What experiences in the EU have proven to be the most effective?

A: The data shows that our world is getting warmer, our weather is becoming more extreme, and greenhouse gas emissions continue to increase. Climate change affects us all, as evidenced by the extreme weather in Europe in 2022, with forest fires and widespread droughts. Now is the time to act effectively. Latent action can be costly in the long run. Everyone can incorporate learning about climate into their daily routine. This can be as easy as listening to podcasts or following climate change experts on social media. Minor changes will help, like not using disposable coffee cups, turning off electronic devices when not in use, riding a bike to the grocery store or following climate action content on social media. You're not just doing this for the planet – you are doing it for yourself too! Saving energy means saving money. Governments have a significant responsibility to address climate change, while systemic changes are needed that will affect economies. These changes include updating international and national legislation and creating more opportunities and investments in research and development to combat the energy and climate crisis.

Interview by Mirjana Vujadinović Tomevski

CHARGE&GO PUSHES THE BOUNDARIES OF E-MOBILITY

Charge&GO continues to expand its network of chargers, accelerating the pace as the summer season approaches. The charging infrastructure is the foundation on which the future of electromobility is built, which is why improving the charger map in Serbia and the region is entirely in line with global trends.

The company Charge&GO recently added new chargers for electric vehicles to its network and announced exciting plans for this year, especially for tourists going to the sea via North Macedonia in an electric car this summer. Some of the new chargers are already operational and available to users, while the rest will soon be on the Charge&GO map.

A 120-kilowatt charger was recently installed at the OMV gas station on the bypass near Surčin, while a 150-kilowatt charger will be put into

A 120-kilowatt charger was recently installed at the OMV gas station on the bypass near Surčin, while a 150-kilowatt charger will be put into operation on the other side of the highway, also at the OMV gas station, by the end of April

Photographs: Charge&GO

operation on the other side of the highway, also at the OMV gas station, by the end of April. Some time ago, a 45-kilowatt charger was put into operation at the OMV gas station in Zaječar. That's not all; the plan is to install another 60-kilowatt charger in the parking lot of the BIG shopping center in Rakovica this spring.

To conclude, two DC chargers, one in the vicinity of Belgrade and the other in Zaječar, are already online, and the other two will be operational as soon as possible.

Safe travel throughout Europe

When developing infrastructure, the standardization of chargers is essential, which is why the European Union is working to solve this issue to facilitate international travel. When it comes to traveling to other countries, one of the company's innovations is that registered users have a roaming platform, the largest of its kind in Europe.

With the help of this platform, of which Charge&GO is a part, numerous companies that provide electromobility services across the continent are connected in one place. At the same time, drivers are assured of easy use of chargers not only in our country and region but also abroad. Charging authorization is done via an RFID card that is already enabled for users, making the process simple and efficient. For these services, it is necessary to sign a contract whereby the procedure is not complex and is easily achievable if the request is sent to podrska@chargego.rs. After this, the user will immediately have an ample map available when leaving our country, and there are hundreds of thousands of chargers of various companies, whereby the application will provide drivers with a simple display of arrival to the desired place.

With the continuous expansion of the network of chargers, the company Charge&GO extends the availability of its application beyond the borders of our country.

– By the beginning of the summer, the Charge&GO network will also be available in North Macedonia, with a customized version of our application for the Macedonian market – explains Tamara Zjačić, the company's deputy director.

When the application opens on the Macedonian market, it should display a map with 10 DC chargers that will be available to drivers by mid-June.

Charge&GO is growing and expanding month by month. By the end of the year, the number of chargers will increase drastically both at the company level and throughout the country, which is why the number of electric vehicles could exceed expectations. According to certain forecasts, there should be around 3,500 fully electric vehicles in Serbia by the end of the year, although now that number is between 2,500 and 2,700 cars. Exact information on the number of registered electric vehicles is not publicly available, although a register exists in the Ministry of Interior. Data on the number of registered electric vehicles would greatly help companies such as Charge&GO since determining infrastructure needs would be easier and more precise if the number of e-vehicles and their popularity among drivers is known.

The existence of supporting infrastructure is inevitable for the further popularization of electric cars. First, it is crucial to increase the number of charging stations along highways and in urban areas, which the company Charge&GO is constantly working on.

Prepared by Milica Vučković

WITH LUXEN SOLAR TO A HEALTHIER ENVIRONMENT

We live in a time when we face major global challenges to prevent further environmental pollution and ensure a healthy and environmentally clean environment. Every individual must contribute to this goal, as well as every company, regardless of the industry they operate in.

As a renewable energy company, Luxen Solar not only produces the latest generation solar panels that ensure a quick and efficient transition to clean energy but also tries to contribute in every way to the global goal of preserving the environment, in accordance with the United Nations 17 Global Sustainable Development Goals, REACH regulations, and RoHS directives.

Environmental protection awards

In 2023, Luxen Solar received three environmental protection awards – the highest state recognition for its contribution to the development of the green industry, recognition for special contribution in the process of green production and recognition for intelligent transformation and production.

"As a company that has its own factory, Luxen Solar pays special attention to the health of its workers and the environment in which panels are produced. Chemicals are one of the main pollutants in production plants. Luxen Solar strictly adheres to the RoHS directive on the restriction of the use of hazardous substances in electrical and electronic equipment, as well as the EU's REACH regulation related to the registration, evaluation, approval, and restriction of chemicals. The company also requires compliance with the same regulation from its suppliers, who are obligated to submit a report that the products Luxen Solar purchases from them do not contain dangerous substances, neither for the health of the workers nor for the

Photographs: Luxen Solar

The company produces panels in line with the latest TOPCon LECO technology, thanks to which products have high endurance, longevity, and efficiency

environment", the company says and adds: "As part of our efforts, we take into account all aspects relevant to environmental protection and sustainable development. These include energy and resource management, quality control, data and information security, the environmental impact of production, business ethics, recycling and the use of recyclable materials, wastewater management, respect for human rights, social responsibility and other aspects related to environmental protection and sustainable development following national and EU regulations", the company states.

'Green' factory

In Luxen Solar's immediate environment, we have installed street solar lights and PV carports for charging electric vehicles and scooters of our employees. The annual production of the carports is equivalent to saving almost 57 tons of CO_2, which can be translated to using 13 passenger vehicles for one year or almost 20 tons of recycled waste instead of the waste that ends up in landfills.

Solar rooftop installation with our TOPCon state-of-the-art modules of the latest LECO (laser enhanced contact optimization) technology will contribute to a saving of 246 tons of CO_2, 120.000kg of burned coal or 85 tons of recycled waste instead of the waste that is deposited on landfills.

The company's new 210mm production line, guided by artificial intelligence and characterized by high precision, speed, smart data processing, 24-hour monitoring, and quality control, enables an increase in production speed by 30 per cent and efficiency of used equipment by over 10 per cent.

The company produces panels in line with the latest TOPCon LECO technology, thanks to which products have high endurance, longevity, and efficiency. The company has introduced an innovative frame design with exceptional mechanical features (800-1200Mpa in comparison to 250Mpa – alu frame). It has axial tensile strength more than seven times higher than standard frames, significantly higher resistance to salt mist and chemical exposure, and CO_2 savings of 98,5 per cent compared to the production of standard frames.

Luxen Solar has also implemented a packaging optimization programme to use recyclable green packaging instead of single-use packaging, ensuring equal stability and safety in transport.

With the view of constantly elevating clean production to a new level, the company takes new steps to prevent pollution, considering even the smallest production processes, such as the soldering process, where we use lead-free solder wire instead of standard leaded wire, effectively eliminating the use of any toxic substances.

Luxen is also a member of the PV Module Recycling Working Group, which was established by the China Photovoltaic Industry Association (CPIA) to promote recycling in the PV module industry.

"The path to a green future is brighter and easier if everyone makes at least a small contribution. We have only one home, Earth, where fresh air, a clean environment, and green areas mean life – life for each of us, today and tomorrow. Transition to a greener, clean future with Luxen Solar", the company says.

Luxen Solar

GOOD MANAGEMENT OF PROTECTED AREAS LEADS TO BETTER NATURE CONSERVATION

The Institute for Nature Conservation of Serbia, which deals with the protection and improvement of natural heritage, currently has 472 protected areas in Serbia under its jurisdiction, spanning 762,960 hectares or 8.62 per cent of the territory of our country. Various institutions and organizations can manage protected areas in Serbia, including public and communal municipal companies, cultural centers, tourist and non-governmental organizations, civil sector associations, church dioceses, and individuals in the case of protected trees. The same goes for the qua-

Photograph: Unsplash/Neon Joi

> Reviewing the development plans and initiatives related to the population and local communities is the basis for providing guidelines for the sustainable development of the area and management measures of the protected area

Nataša Panić
head of the Department for Educational & Publishing Activities and Communications at the Institute for Nature Conservation of Serbia

lity of management at different levels regarding implementing measures and ensuring the required finances and logistics, as well as personnel and management priorities related to preserving, monitoring, and protecting biodiversity and geodiversity. Understanding the importance of all social actors for the management of protected areas begins with evaluating a specific area during the drafting of the Nature Conservation Study.

Nataša Panić, head of the Department for Educational & Publishing Activities and Communications at the Institute for Nature Conservation of Serbia, says that in addition to the assessment of all the values of the protected areas, an integral part of the mentioned Study is the analysis of the interested public, with a particular emphasis on the population of the future protected area and an assessment of their needs. Reviewing the development plans and initiatives related to the population and local communities is the basis for providing guidelines for the sustainable development of the area and management measures of the protected area.

"Participation of all stakeholders in the protection and development of the future protected area is implemented later through the process of declaring a certain area as protected by conducting a public inspection procedure and having a public discussion related to the Conservation Study and the proposal of the Regulation on the declaration of a certain area as protected. Only based on the consent of all participants in the public inspection and public discussion process can the procedure for declaring the area protected be finalized", Ms Panić says and adds that after obtaining the status of a protected natural asset and appointing a manager for that particular area, comes further coordination of all social actors in the protection and development of the area by the institution or the organization that has been assigned this function.

She goes on to say that the following are of particular importance in improving the management of protected areas – hiring professional staff who will be multidisciplinary, conducting training, providing the necessary finances and logistics, and facilitating development that will be harmonized with nature without jeopardizing natural values and establishing a partnership with all interested parties. Monitoring and networking with the information systems of various nature conservation institutes and institutions, working on improving the quality of life of local communities, implementation of projects and generating profit for the protected area, but also

Photograph: (bottom left) Unsplash/Eric Terrade; (Panić) courtesy of Nataša Panić

networking with international partner institutions and programmes and development of eco-tourism infrastructure together with visitors are all important, as are implementation of educational programmes for different target groups and branding of local products that come from the protected area.

Management of natural resources

As part of its activities, the Institute for Nature Conservation of Serbia also assesses if a certain organization or institution meets the staffing and logistical requirements and can propose a manager for the area for which the Conservation Study is being drafted. The work and activities in the protected area, which are related to the conservation, arrangement, maintenance and implementation of protection and development measures, as well as ensuring security services, are carried out based on the Decree on the declaration of conservation and management documents issued, with an assigned manager being responsible for the Decree's implementation.

"The Institute for Nature Conservation of Serbia issues the manager with a list of nature conservation conditions incorporated into the said documents. The manager also cooperates with communal services and relevant inspectors to prevent and eliminate illegal activities in the protected area. The Institute also carries out professional supervision to review the program's implementation and management plan in accordance with the given nature conservation conditions," Ms Panić explains.

To fulfil obligations related to the conservation, improvement and promotion of natural and other values and sustainable use of the protected area, the manager must meet the professional, staffing, and organizational requirements according to the Law on Nature Protection and the Rulebook on the prerequisites that the

To preserve biodiversity and protect rare species in Serbia, 2,633 species of plants, animals and fungi are under protection

ENVIRONMENTAL NETWORK OF SERBIA

The national environmental network consists of ecologically significant areas and corridors of national or international importance. Following the Decree on the Establishment of the Environmental Network of Serbia, the network currently includes 101 ecologically significant areas spanning a total of 1,849,201.77 hectares, which is 20.93 per cent of the country's territory. The Institute creates and updates a digital database that contains vector-displayed borders of the environmental network area and a map of ecologically significant areas.

Photographs: (top) Unsplash/Ilse; (bottom right) Unsplash/Alessandro la Becca

manager of the protected area must meet. According to that Rulebook, the manager must implement organized conservation, improvement and promotion of sustainable development of the protected area and guard service. Good staff and appropriate technical equipment are also needed, both chosen by the manager. The manager is also in charge of implementing the Management Plan, i.e. its scope and type of planned activities, which largely depends on the staff's skills and technical equipment.

Serbia also has a concept of public-private partnership (PPP), which is not sufficiently developed. Still, based on the model of good area management in the region, PPP is considered a good option.

Protection of rare and endangered species

To preserve biodiversity and protect rare species in Serbia, 2,633 species of plants, animals and fungi are under protection. The so-called Red Lists and Red Books include the most endangered species, where vulnerability assessment is carried out based on the methodology prescribed by the International Union for Conservation of Nature (IUCN). So far, four Red Books have been published for Serbia, namely for flora, butterflies, amphibians, reptiles and birds, with the ones that include fish and aquatic invertebrates to be published this year.

Ms Panić also states that in addition to the species listed in the Red Books, protection programmes are implemented for endangered species due to the decline in population numbers, such as golden eagle, peregrine falcon, mountain grouse, lynx, bear, chamois, crayfish, sapling, and many others.

"Some species are endangered because they only live in a small number or just one habitat. Pančić's grasshopper, which only lives in the Tara National Park and nowhere else, the great bustard, as well as the griffon vulture, which today has a stable population in our country but whose survival depends on the maintenance and operation of the feeding grounds, are also endangered", says Ms Panić.

Improving the legal framework

Nataša Panić goes on to say that the legal rules relating to nature conversation are regulated by the Law on Nature Protection, which offers reasonable solutions and is also successfully implemented in the protected areas in Serbia. One of the important provisions is that in 2021, the law prescribed a complete ban on the construction of hydropower plants in protected areas.

"Starting from the fact that no law is perfect and that better solutions can always be found, the plan is to amend the existing law and perhaps pass a new one. The idea is to continue improving the legal framework that regulates nature conservation by making required changes, i.e. passing a new law", says Ms Panić and adds that people's awareness of the need for nature conservation is constantly growing, but to be active participants in nature protection, people first need to be educated and develop behaviors that are in line with nature conservation postulates.

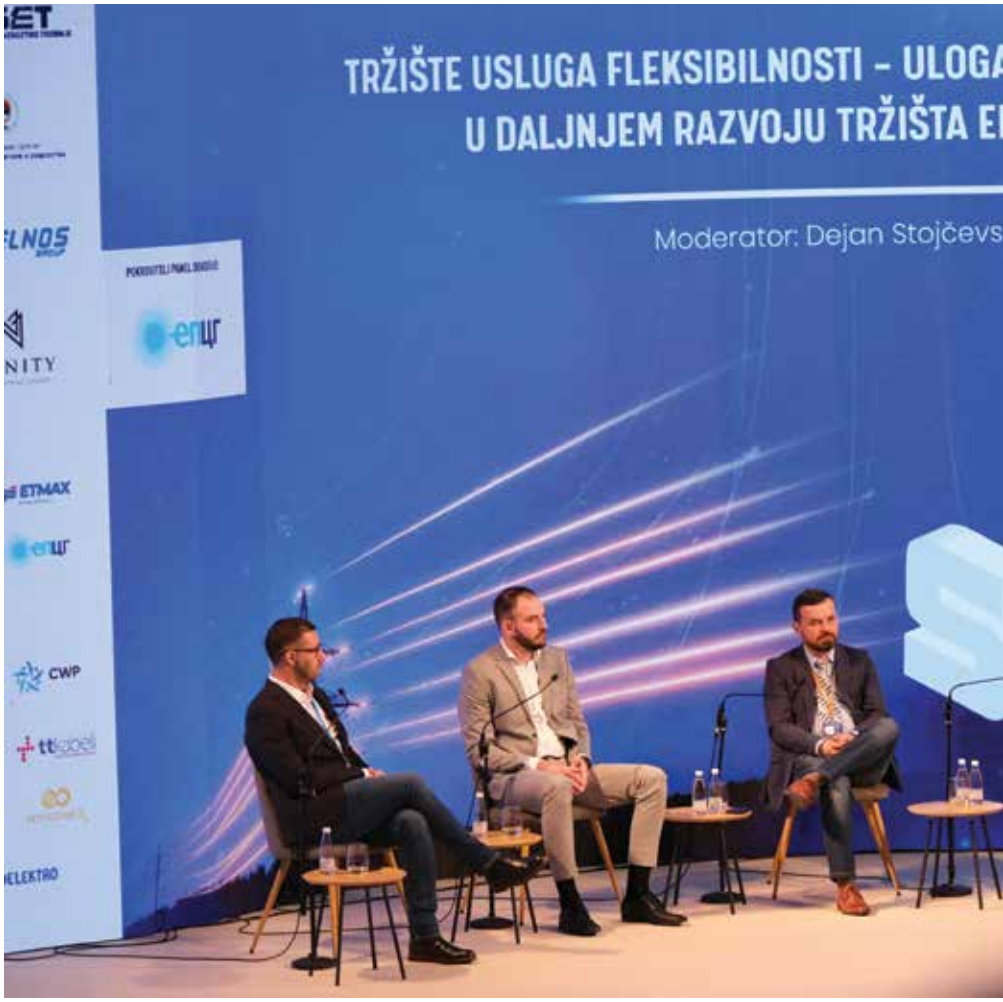
The Institute for Nature Conservation of Serbia implements numerous educational programs for different segments of the public – from preschoolers and elementary, high school, and university students to residents of protected areas, the civil sector, managers of protected areas, and the general public. The Institute also implements educational programmes through campaigns that promote the importance of natural assets and resources and thereby disseminate awareness of the importance of their preservation to build the know-how and skills of an environmentally active and responsible population.

Prepared by Mirjana Vujadinović Tomevski

Photographs: (middle left) Unsplash/Jevgeni Fil; (top right) Unsplash/Nemanja Ćirić

THE TREBINJE ENERGY SUMMIT IS MOVING TOWARDS ITS BIG JUBILEE

The fifth Trebinje Energy Summit (SET) took place from March 20 to 22 under the slogan Energy Connectivity of the Western Balkans. The Summit hosted the largest number of participants so far. Thanks to the event, many businesspeople and experts had the opportunity to hear interesting panel discussions related to green energy, renewable sources, power transmission systems, energy production and the energy market. At the same time, many also used this opportunity for business meetings. Considering the gravity of such an event, which grows every year, the Summit is looking for a bigger venue for future events. A few days before this year's summit, a project was drafted depicting the establishment of a congress center in Trebinje in a few years. In addition to the professional segment, the organizers also provided a great entertainment programme in the evening. We spoke with Aleksandar Branković, director of the SET Company, about his impressions and plans after this year's Jubilee Energy Summit.



Q: The fifth Energy Summit is over, marked by record attendance and participants from as many as 11 countries. What are your impressions?

A: As the Summit organizer, I am extremely satisfied, especially considering the number of participants who attended the Energy Summit

Photographs: SET

Thanks to the event, many businesspeople and experts had the opportunity to hear interesting panel discussions related to green energy, renewable sources, power transmission systems, energy production and the energy market. At the same time, many also used this opportunity for business meetings

during the three days. With more than 900 participants and over 200 companies in one place and considering that the Republic of Srpska and Trebinje are relatively small, I can confidently say that we have become a regional energy hub.

Q: The Summit featured seven panel discussions and exceptional participants. Would you like to single out some of them?

A: It is always the first panel that deserves the most attention. It bears the very slogan of the Energy Summit, which is the Energy Connectivity of the Western Balkans. It was attended by representatives of electricity companies who discussed mutual projects and joint and future cooperation.

Aleksandar Branković
director of the SET Company

I will continue to follow the situation to see if the conclusions that had been presented (during the panel) will be implemented because there was talk of large joint energy infrastructure projects, primarily on the Drina River but also on the Trebišnjica, and the construction of the second block of the Dubrovnik hydroelectric power plant. There was also talk about cooperation with Montenegro, and the project centered around the Upper Drina, with Elektroprivreda Bosnia and Herzegovina included in this project. In terms of other panels, in addition to the one dedicated to solar power plants and installing panels on house roofs, the one focused on electricity trading was quite popular.

Q: This year, 187 companies attended the Trebinje Energy Summit. How much did this event contribute to their connecting and establishing cooperation?

A: From the organizer's point of view, it isn't easy to ascertain how many contracts have been signed. This year, we had 187 companies registered to participate in the SET, with probably around 1,000 meetings held. We got some feedback about contracts deserving of attention being concluded. For instance, two years ago, the Siming Company from

Photograph: (Branković) courtesy of Aleksandr Branković

Foča signed an agreement with Porsche stipulating the development of a software application for charging electric vehicles. Porsche donated one charger for electric cars to the Trebinje Summit, and everyone who comes to the town with an electric vehicle can charge it for free. Many companies come back every year because they have a strong interest in participating in the Summit.

Q: Thanks to the Energy Summit, the tourist season in Trebinje starts earlier. How significant is the arrival of summit participants for that branch of the economy?

A: The Energy Summit is the true herald of the beginning of the tourist season here in the south of the Republic of Srpska. Last year, the local tourist board registered 2,400 overnight stays in two days. These are registered numbers, and probably there were more that were not registered. This year, we had 913 participants.

During the SET in Trebinje, there was a lot of consumption. As the organizer, I can confirm that we paid more than 153,000 euros to caterers and suppliers based on overnight stays and other related costs.

Q: The plan is to build a congress center in Trebinje, and the best design solution has already been chosen. How much will such a venue mean to SET?

A: We have advocated this since our second year when we noticed that SET would become a tradition. At that time, we launched an initiative to build a congress center, but somewhat on a smaller scale. We also thought that we needed a good hotel capacity and a congress hall, but this conceptual design is much larger. If it is done soon, which depends on the value of the investment and construction speed, the complex will mean more than just a SET venue. The congress centre will be able to accommodate a much larger number of participants, which will be

Photographs: SET

a novelty in the congress organization. The aim is to provide guests with a complete service in one location. Someone who comes to the congress centre to attend SET won't have to leave the venue because all their business and entertainment needs will be met here. Large regional centers already have their congress venues, so why shouldn't Trebinje, too?

Q: You have been at the head of SET Trebinje since its very beginning. Interest in this professional event grows year-on-year, and energy-related topics are becoming increasingly popular worldwide. What are your plans?

A: I have devised the entire story around the Energy Summit, and I am the director of the eponymous company. A small group of people prepares everything you see during the summit. Together, we outline everything that will happen in the three summit days, and those are the guidelines that we follow. We are a small team of people, but we are very organized. We encountered difficulties in the beginning, but the fifth summit year is behind us, and it is much easier to organize everything now. The plan is to continue developing this event as much as possible within the existing capacities. This will be the case for the next two to three years. If the congress centre is built in the next three or four years, then the plans for the further development of SET and the company will be tied to that period after we relocate. This could mean that we will be at a different turning point on our tenth anniversary. Being in the business and growing for 10 years straight is a big deal.

Interview by Jasna Dragojević

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GREEN TRANSFORMATION OF THE REPUBLIC OF CROATIA

Access to European Union funds provides the Republic of Croatia with the necessary finances for investments in infrastructure construction, as well as green and digital transition. Thanks to this, the country can implement numerous reforms and projects faster and with better quality, boosting its economy and creating new opportunities, especially in green and clean technologies. In an interview for Energy Portal Magazine, Damir Habijan, Croatian Minister of Economy and Sustainable Development, talked about the green transition, investments in renewable energy sources and how the Republic of Croatia plans to achieve its goals and become climate neutral.

Q: The Republic of Croatia is committed to implementing the Green Plan for Europe, which aims to make the continent climate-neutral by 2050. How do you plan to accomplish your goals?

A: The Republic of Croatia fully supports the implementation of the Green Plan for Europe and is fully committed to making Europe the

The Energy Development Strategy sets a target of at least 2,500 new MW in the production of electricity from renewable sources by 2030

Photograph: Unsplash/Mike Swigunski

> The Republic of Croatia fully supports the implementation of the Green Plan for Europe and is fully committed to the goal of making Europe the first climate-neutral continent by 2050

first climate-neutral continent by 2050. In this context, all EU Member States started drafting National Energy and Climate Plans (NECP) in 2019, which set three main goals related to decarbonization: reduction of CO2, the share of renewable energy sources in final consumption and increase of energy efficiency. All the stated goals are set at the EU level. It should be noted that these goals have been constantly raised during the last five years, both because of the Fit for 55 package and the REPowerEU plan, devised due to the aggression against Ukraine, which largely led to the drastic jump in energy prices. That is why the European Commission has set a clear goal with the REPowerEU plan to rid the EU of its dependence on fossil fuel imports, especially from unreliable partners, as soon as possible. The plan mentioned above boosts the effort related to decarbonization, which, in addition to reducing greenhouse gases, should also reduce the European Union's dependence on energy imports from third countries.

Q: What does the National Plan for Recovery and Resilience bring, and when will it be implemented?

A: The National Plan for Recovery and Resilience is another important document that envisages a series of reforms and investments that will ensure a green and digital transition and better functioning of the state administration. The document was created based on the EU Regulation and is a direct consequence of the COVID-19 pandemic. In it, we, as a state, have highlighted which reforms we consider necessary and

Thanks to his diverse knowledge, including law, analytical abilities, attention to detail, innovation and skills in project management and problem-solving, Damir Habijan has successfully structured, implemented and/or provided complete legal support for numerous acquisitions, mergers, divisions and recapitalizations of companies, joint ventures, investments, restructurings, public tenders, due diligence, issuance of securities and a wide range of contracts and litigation. In the Croatian Parliament, he was a member of the Economy Committee, Legislation Committee, Committee on the Constitution, Rules of Procedure and the Political System and Judiciary Committee, and vice-president of the National Council for Monitoring the Implementation of the Anti-Corruption Strategy.

Photographs: (bottom left) Pixabay/Ma Frank; (Habijan) courtesy of Damir Habijan

proposed activities and investments with which we will implement them. On the other hand, the plan brought significant financial resources, which initiated a series of economic activities. For example, after the NPOO Addendum worth about 4.5 billion euros was approved in December 2023, the total amount of funds we have at our disposal increased from 5.5 to 10 billion euros. That is about 15 per cent of our annual GDP. The significance of this is shown by the fact that this percentage is the highest in the EU; that is, no other member state has agreed on such a high percentage of NPOO funds in relation to their economy size. The Republic of Croatia has received 3.5 billion euros so far. It should be noted that Croatia is among the first three EU countries that sent the fourth request for disbursement of payment under the NPOO auspices, and we expect the payment of an additional 163 million euros in grants soon. I would like to note the example of the energy sector, to which, after the revision of the NPOO, 1.4 billion euros were allocated. A large part of that money is aimed at the green transition. The rest is invested in the security of supply and diversification of sources for Southeast Europe. The green transition is also financed in other sectors, such as water management, waste, etc.

Since 2019, over 14,000 sites with discarded waste have been reported to the ELOO system

Photographs: (top) Pixabay/Andreas H. ; (bottom) Pixabay/Neufal54

Q: How significant are investments in renewable energy sources?

A: Investments in renewable energy sources (RES) are significant, and considering our geographical position, we have great RES potential. In the southern part of the country, we can see large-scale investments in wind farms and solar power plants, as well as in northern Croatia. Integrated solar power plants, installed on roofs or in the vicinity of houses, other buildings and factories, are particularly important to us. They increase the share of renewable energy in the total energy mix and ensure the inclusion of individuals and small business owners and their active participation in the energy transition. Equally important are the large hydropower plants that also produce the so-called green electricity. Besides wind, water, and sun, geothermal energy and bioeconomy (biogas and biomass) should also help us with this. Linking biogas and biomass to agricultural production ensures a green transition. In terms of geothermal energy, we have highly favorable conditions for using the geothermal energy accumulated underground in the Pannonian Basin, which has a geothermal gradient as much as 60 per cent higher than the European average. To use this potential as efficiently and effectively as possible, the 2030 Geothermal Potential Development Plan of the Republic of Croatia was drawn up due to the need to ensure the further development and use of domestic renewable potential, which should be utilized more widely in energy transformation for the production of electricity, i.e. for heating and cooling.

So, regarding renewable energy sources, the Energy Development Strategy sets a target of at least 2,500 new MW in producing electricity from renewable sources by 2030. Still, thanks in large part to the National Recovery and Resilience Plan and our investments in the transmission power grid, I assure you that we will achieve this goal earlier, that is, in 2028.

Q: How important is the construction of the Grubišno Polje underground natural gas storage facility for Croatia?

A: This is the second part of the story in which the Republic of Croatia is an important energy hub in this part of Europe when it comes to the security of supply and diversification of fossil fuel import sources. In this context, in January 2021, we opened the LNG terminal on Krk and secured new sources of natural gas. Once the crisis related to the war in Ukraine erupted, the entire EU made a concerted effort to fill its gas storage and ensure a stable winter. Thus, the Republic of Croatia filled PPP Okoli. Still, we also recognized the importance of building an underground storage facility in Grubišno Polje for peak load needs, when a larger quantity of gas can be taken from it in the short term because gas needs exceed the usual amounts. That's why we have ensured additional quantities of gas when consumption is exceptional and higher than usual, which reduces the pressure on the entire gas transportation and distribution system.

Q: How does the Waste Location Record application work, and has it contributed to solving the waste problem?

A: People in Croatia are obliged to responsibly manage the waste they create, while local governments must ensure that all the appropriate conditions for this have been met. Thus, by waste management regulations, local governments (in municipalities and cities) are required to ensure the collection of mixed municipal waste from households and other sources, biowaste from households, recyclable municipal waste, and hazardous municipal and bulky household waste. Although a responsible waste management system has been established, there are still irresponsible people who throw waste into the environment in an uncontrolled manner. To raise people's awareness about the quantity of waste dumped into the environment and restore

Photograph: Unsplash/Hadar Elia

trust in local governments regarding waste management, the Waste Location Record application was created as part of the Waste Management Information System (ELOO). People can now report the location of discarded waste without registering at https://eloo.haop.hr/public/otpad/prijava. Clicking on the option "Report Waste" opens a form in which you enter the location on the map of the Republic of Croatia.

Then, the application user should select the county, city, or municipality from the drop-down menu, the type of waste, the estimated mass and contaminated area, and a short location description. They can leave their full name and phone number, but it is not mandatory. After that, they are required to attach photos (a maximum of four photos). Finally, they need to click on the Send Application option. After successfully registering the location in the system, the location becomes visible in the browser. The municipal warden responsible for a certain area receives a message that a new location has been reported in his area, which will determine the actual situation, update the data, and confirm or cancel the location.

Since 2019, over 14,000 sites with discarded waste have been reported to the ELOO system. At about 11,600 (83 per cent) locations, the municipal warden went out to the location and confirmed that the location was indeed contaminated with waste. In comparison, discarded waste was not confirmed for the remaining 17 per cent of locations. These are mostly locations that have not yet been inspected by communal wardens, and a smaller portion are the same locations for which multiple applications have been registered. Observed by types of waste, the most frequently disposed waste is construction waste, mixed municipal waste and bulky waste (most often as mixed waste). The ELOO system also contains data on the locations of waste disposed of underground. Currently, 811 such locations are registered.

ELOO has shown great potential and received a good response from the public and relevant administrative authorities. This is validated by the significant number of reports of locations from which waste has been removed.

Q: You pay a lot of attention to the energy transition of the Croatian islands. How do you do that, and when do you expect them to become energy-independent?

A: During our presidency, we passed the so-called Split Declaration, underlining the importance of clean energy for all islands. Both local stakeholders and the state authorities are already working on the islands' energy independence, but we also need to ensure this energy is green. Therefore, we must ensure the use of RES and their potential storage and utilization in decarbonizing sectors such as transport, heating, and cooling. This is feasible and important because it gives our islands energy independence and increases their

Photographs: (top) Pixabay/Van3ssa Desiré Dazz ; (bottom) Pixabay/Marko Tomić

Under the auspices of the greenhouse gas emissions trading system, the Republic of Croatia has the Modernization Fund until 2030, with about 1 billion euros available for the green transition

attractiveness. We want them to be habitable all year round and to increase the share of the young population living on them. Furthermore, we have secured funding for restoring submarine cables connecting the islands to the mainland, thus adding an important segment related to energy security of supply. We are working hard to make the islands energy-independent and to produce and store energy from renewable sources. Still, we have not left out the importance of supply security as one of the most essential elements for further developing the islands and improving their quality of life.

Q: You pay special attention to energy renovation of houses. What has been done so far, and what are the plans for the next period?

A: Thanks to the unfortunate circumstances that the Republic of Croatia experienced, including the earthquakes in Zagreb, Sisak, and Petrinja, we have been working hard to renovate affected houses. However, in addition to energy renovation, constructive renovation is also important to us, as it must ensure that our cultural assets are protected from potential new earthquakes. At the same time, we are renovating those facilities in terms of energy, which is connected with the green transition. The renovation of houses, housing stock, and other facilities (cultural, administrative, business, etc.) is significant and will generate energy savings, i.e., ensure that less energy is used for these spaces. This fully aligns with the EU's efforts to put energy efficiency first. However, at the same time, a lot of work is being done to ensure that fossil fuels are not used for heating and cooling these renovated spaces. This is especially important when it comes to large central heating systems. Geothermal energy and other renewable sources can help us here. Therefore, when we talk about the energy renovation of buildings in the Republic of Croatia, the synergy between the energy renovation itself and the production of energy from renewable sources is important to us.

Q: As an EU Member State, you can access EU funds. How important are these financial resources, and what do you most often use them for?

A: From the above answers, you can conclude that EU funds are important to us. By joining the European Union, the Republic of Croatia started to participate in the emission trading system, and by selling emission units, it generated significant revenues, which were spent by the Plan for the use of financial resources from auctions. Until and including 2023, the Republic of Croatia earned about 763 million euros from the sale of emission units. Through the Environmental Protection and Energy Efficiency Fund, the money mentioned above is channeled into measures that facilitate an increase in energy efficiency, mainly in buildings, the installation of renewable energy sources, the purchase of vehicles with alternative drive, the development of sustainable transport infrastructure, the construction of waste management centers and others.

Also, under the auspices of the greenhouse gas emissions trading system, the Republic of Croatia has at its disposal the Modernization Fund until 2030, with about 1 billion euros available for the green transition. The Fund's money is allocated exclusively to the decarbonization of Croatia through investments in the production, use and storage of energy from renewable sources, including hydrogen from renewable sources, investments in boosting energy efficiency, modernization of energy grids, traffic measures, as well as other investments that lead to the reduction of greenhouse gas emissions and fossil fuel consumption. So far, the Republic of Croatia has been approved for close to 262 million euros for investments in increasing energy efficiency and producing and storing electricity generated from renewable sources. In 2023, the call for the allocation of funds for the production and storage of electricity from renewable sources in the processing industry and heating was launched. This year, four tenders with a total value of around 200 million euros are being drafted focused on promoting renewable energy sources and energy efficiency in the processing industry. Public water service providers and municipal waste collection companies are eligible to apply.

Interview by Milica Radičević

ENVIRONMENTAL LABELLING AND ECO-LABELS

The fact remains that the stability of our planet has been irreversibly damaged and that human civilization has contributed to this state with its activities, especially in terms of energy and resource consumption. Consequently, the world has changed a lot during the last decades. Awareness of climate change, caused by the negative impacts of our consumer society, has grown rapidly and can be said to have become a global public consciousness.

Although the daily desires for shopping and consumption are still present, consumers increasingly consider ethical and environmental issues in their purchasing decisions. In this way, consumers represent new social expectations that require companies to integrate environmental features and sustainability issues in the research and development of their latest products and business strategies to align their goals with sustainable development goals – environmental, social, and economic.

To achieve these goals and convince environmentally conscious consumers to buy a particular product, companies use eco-labels and ecological claims, emphasizing the environmental acceptability of the product or high ethical standards.

Ecolabelling is a voluntary procedure for certifying the environmental performance of products or services within a specific category. This way, ecological features and aspects are highlighted, while manufacturers give consumers information about the environmental impacts of their products or services throughout their life cycle.

This topic will undoubtedly receive more attention in time, considering that the Eco Sign affects the improvement of the implementation of the circular economy

Ecological labelling makes products more recognizable on the market, i.e. it facilitates:

- **Informing consumers and facilitating their choice when purchasing.** Environmental labelling is an effective

Photograph: Pixabay/Annette

The Republic of Serbia's Eco Sign is very symbolic and consists of intertwined symbols of a tree and a cube – the cube represents a product that received the eco sign, and the tree represents nature, life, and development

way of informing consumers about the environmental impact of the selected product. In this way, consumers can distinguish between products that harm the environment and those that are environmentally acceptable.

- **Promotion of economic efficiency.** Ecolabelling has lower economic costs than regulatory controls. Thus, it generates benefits for both government and industry.
- **Stimulating market development.** When consumers choose to buy products with eco-labels, they have a direct impact on the creation of an environmentally friendly/green market.
- **Encouraging continuous improvement.** Dynamic environmental markets encourage corporations to commit to continuous environmental improvement of their products or services.
- **Promotion of certification.** The ecological certification programme proves that products have met specific environmental labels and declaration standards. This way, consumers are provided with visual information about the product and its environmental features. For these reasons, certification has an educational role for consumers while promoting competition among producers.
- **Assistance in monitoring.** The benefits of official eco-labelling are in validating ecological claims that facilitate monitoring. By doing so, consumers and competitors can better assess the credibility of these manufacturer claims.

Environmental labelling encourages sustainability and sustainable development, environmental protection, more efficient use of energy, rational use of non-renewable natural resources, implementation of ecological practices at the state, regional and global levels, preservation of ecosystems and biodiversity, improvement of the waste management system by the implementation of recycling, better management of harmful substances in products, application of cleaner production, development of new, greener production technologies, development of eco-innovations and more straightforward trading in ecological markets.

The International Organization for Standardization ISO and its standards from the ISO 14024 series identifies and defines three types of environmental labels and declarations based on classification: Type I – environmental labels, Type II – self-declared claims and Type III – environmental declaration.

TYPE I – ENVIRONMENTAL LABELS represent a voluntary product labelling programme awarded by an independent third party based on multiple environmental criteria. They are gi-

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Photographs: (Petrović) courtesy of Nataša Petrović; (bottom right) Pixabay/Shirley Hirst

Blue Angel

Type I environmental labels include:

- Blue Angel (Germany)
- EU Flower (European Union)
- Nordic Swan (Scandinavian countries)
- Eco Sign of the Republic of Serbia (Serbia) and others.

Eco Sign of the Republic of Serbia

ven exclusively to products with a life cycle assessment. Environmental labels are based on demanding and strict environmental quality criteria and guarantee that the marked products comply with that market segment's highest environmental protection standards. The process of awarding Type I designations consists of the selection and consideration of the following:

- Product categories,
- Ecological product criteria,
- Functional characteristics of the product

Nordic Swan

EU Flower

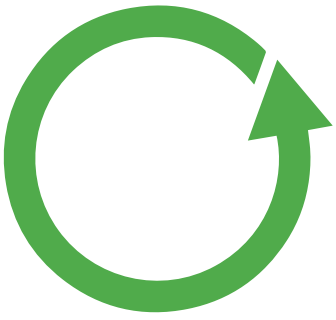
Ecolabelling is a voluntary procedure for certifying the environmental performance of products or services within a specific category

TYPE II – SELF-DECLARED CLAIMS refer to claims made by manufacturers about the environmental characteristics of products but often focus on specific environmental impacts such as energy consumption and agricultural practices and apply only in specific sectors.

Type II labels are, for instance:

- recycling signs,
- packaging for recycling,
- proper disposal of rubbish,
- made of recycled material,
- biodegradable,
- reduced water consumption,
- waste reduction, etc.

The Mobius loop – recycling signs



packaging for recycling

proper disposal of rubbish

Illustrations: courtesy of Nataša Petrović; (Eco Sign of the Republic of Serbia) Serbian Ministry of Environmental Protection

TYPE III – ENVIRONMENTAL DECLARATIONS are product labelling intended for communication between companies and rarely found on products designed for free sale. Labels of this type highlight the environmental performance of products that provide more detailed quantitative information to enable an objective comparison of products with the same function.

In terms of the eco-label in our country, "the Eco-label of the Republic of Serbia belongs to the type I label – environmental labels, which means that it is a voluntary programme based on multiple criteria of a third party that is granted a license is granted authorizing the use product environmental protection label, which confirms the overall suitability of the product for the environment within a certain product category, which, in turn, is based on consideration of the life cycle. Marks of this type are defined by the SRPS ISO 14024 standard". (Source: Serbian Ministry of Environmental Protection, 2019).

The Eco Sign is prescribed by the Law on Environmental Protection and determined by the Rulebook on detailed conditions, criteria, and procedures for obtaining the right to use the Eco Sign and its elements, appearance, and method of use on products and services from 2016.

The Republic of Serbia's Eco Sign is very symbolic and consists of intertwined symbols of a tree and a cube – the cube represents a product that received the eco sign, and the tree represents nature, life, and development.

The slogan – Friend of the Environment – written in Serbian and English – should provide a clear association of the friendly relationship between nature and the product that deserves this Eco Sign.

The right to use the Eco Sign is granted for three years. Our Eco Sign is a national mark for products and services with a lower negative environmental impact than others in the same or similar category. Also, the product must be manufactured in the Republic of Serbia.

The first Eco Sign was awarded in 2010 to the company Potisje Kanjiža and the second to the company Tarkett from Bačka Palanka. The list of companies and products that have been given this sign can be changed and renewed. Still, the overall conclusion is that there is an evident lack of a sufficient number of companies that have not yet recognized the importance of using the Eco Sign and thus not only having transparent communication with consumers but also possessing real evidence of ecological and responsible business.

This topic will certainly receive more attention in time, considering that the Eco Sign affects the improvement of the implementation of the circular economy.

Photograph: Pixabay/Gerd Altmann

ČELINAC GETS TWO SOLAR POWER PLANTS

The municipality of Čelinac is located not far from Banja Luka. One part of the territory extends at an altitude of 800 meters; in the largest part of the municipality, the altitude ranges from 300 to 600 meters. The lowest point, with an altitude of 196 meters, is at the mouth of the river Jošavka into the Vrbanja. The area and the large number of sunny hours are highly suitable for constructing solar power plants. That is why it is not surprising that in this region, there is a great interest in clean energy, and there are more and more solar power plants that enable energy independence for the owners.

On the hills of the Markovac settlement, the company MT-KOMEX BH

Photographs: MT-KOMEX BH

completed the construction of the solar power plants Markovac Jungići and Markovac Jungići 1. These solar power plants have a total power of 280 kWp and were built on an area of 3,000 m2. According to estimates, their annual production will amount to 360 MWh, which provides the investor with energy security.

The company constructed these solar power plants using solar panels from Canadian Solar. They installed 420 panels, each with a power of 660 W. Likewise, five Fronius inverters, each with a power of 50 kW, were installed.

The investor decided to entrust the construction of solar power plants to MT-KOMEX BH, which consists of an expert team of engineers and installers. They have many years of experience in designing and building solar power plants. In addition, engineers have all the necessary certificates and regularly complete the required training. They provide services from creating a project for a power plant, obtaining permits, and delivering the necessary materials, technology, and labor to the site. The company's hard-working installers are there to set up and install panels from reputable manufacturers, followed by installation of inverters and other necessary infrastructure. Finally, there is a check of readiness for commissioning – all these phases are contained in the phrase "turnkey" and are, therefore, the entire team's responsibility.

On the hills of the Markovac settlement, the company MT-KOMEX BH completed the construction of the solar power plants Markovac Jungići and Markovac Jungići 1

The total power of these solar power plants is 280 kWp, and they are built on an area of 3,000 m^2

The company firmly believes that solar energy and green kilowatts will only experience expansion in these areas, evidenced by numerous inquiries from business people and citizens about the installation of solar panels both on roofs and on the ground. This is contributed significantly by the fact that Bosnia and Herzegovina, as well as Serbia, have more hours of solar radiation than many other European countries. Also, there are large areas that are not used on which solar panels could be installed. The engineers and installers of MT-KOMEX BH are ready for all the challenges that business in Bosnia and Herzegovina brings. They work every day to promote renewable energy sources, answer all clients' questions, and find the best and most efficient solution.

Prepared by Jasna Dragojević

THE NEW ERA OF ARTIFICIAL INTELLIGENCE – AND WHAT IT MEANS FOR THE DATA CENTER SEGMENT

Artificial intelligence is currently the most potent force transforming how we process, analyze, and use data. Predictions say that the artificial intelligence market will reach a whopping $407 billion by 2027. We are talking about an expected annual growth rate of around 37 per cent until 2030. Our interlocutor, Jelena Pejković, Sales Director of Secure Power at Schneider Electric, points out that it is crucial to understand that we are not only talking about generative AI here; this technology will revolutionize numerous industries.

Q: What is artificial intelligence?

A: Artificial intelligence is much more than ChatGPT and similar Generative AI applications intended for the broadest audience. AI already has applications in industry, medicine, education, science, autonomous dri-

Photographs: Schneider Electric

Data centers are constantly evolving to adapt to the demands of AI. Improving power distribution systems and energy efficiency within the data center helps minimize losses and deliver power to servers most efficiently. Operators are focusing on more energy-efficient hardware and software and diversifying power sources

Jelena Pejković
Sales Director of Secure Power at Schneider Electric

ving systems, and many other fields. Its exponential growth brings along challenges, such as a lack of new locations and new mega data centers that require large amounts of energy and, therefore, will be responsible for a higher percentage of CO_2 emissions, which brings us to the question of sustainability. However, the answer to sustainability challenges is digital transformation, of which AI is an integral part, so this must not be an obstacle in their construction because it would slow it down significantly.

This story is fascinating, like the eternal dilemma – which came first, the chicken or the egg. Honestly, I'm thrilled that I'm dealing with this segment right now when this topic is hot. Perhaps it is easiest to start with Generative AI because everyone has already encountered it. Whether talking about Chat GPT or Microsoft Copilot, as many as 97 per cent of company managers already see the benefits of using AI in their daily business, generating reports and presentations, translating information, developing websites, etc. Still, this peak in the adoption of new technology will undoubtedly require more significant investments in infrastructure.

In Serbia, the topic of renewable energy sources, solar power plants and wind farms is topical. Here, AI algorithms also play a crucial role in optimizing energy distribution through the network in real-time. These algorithms continuously analyze data from the grid and adjust the flow of electricity to meet demand while at the same time ensuring the stability and efficiency of the entire grid. With these two examples, I want to illustrate how broad the field of AI application is.

Q: How can we meet the demands of this new world driven by artificial intelligence?

A: Data centers represent the critical infrastructure that supports the artificial intelligence ecosystem. Here, it is perhaps important to emphasize, without going deeply into the topic, that we distinguish training and inference models. So, there are data centers where training clusters are located, where training or model training

Photograph: (Pejković) courtesy of Jelena Pejković

is carried out, and data centers where AI applications are located that we, as users, use for decision-making.

However, whether we are talking about large clusters for training or smaller edge servers that run applications, artificial intelligence is becoming an increasingly large percentage in the data centers themselves, and this is currently affecting a significant increase in consumption per river, i.e. density. These new, significantly increased densities further influence the design and management of data centers. Here, we talk about four key AI attributes and the latest trends that answer the challenges of the physical infrastructure of data centers: power supply, cooling, placement in racks, and management software.

Perhaps a more significant issue than the increase in energy consumption is its more efficient use. Schneider Electric offers numerous solutions and continues developing new ones independently and with numerous partners, such as the recently announced cooperation with NVIDIA.

Q: How can we provide the necessary electricity for AI?

A: Regulatory requirements are strict, but despite that, Internet giants are leading the way when it comes to sustainability and corporate social responsibility goals, pushing the entire industry forward. The world's leading data center operators largely purchase energy from green sources, introduce a circular approach to energy use, hand over waste heat to heating plants in local communities, limit water use, and recycle.

Although artificial intelligence requires large amounts of energy, data analytics based on AI algorithms can help data centers move closer to net zero and address sustainability issues. So, AI is both a challenge and a solution.

Interestingly, 1,287 MWh of electricity was consumed to create GPT-3, and 552 tons of CO_2 were produced, equivalent to the emissions that 12_3 gasoline vehicles would produce in one year of driving.

Photograph: Schneider Electric

In Serbia, the topic of renewable energy sources, solar power plants and wind farms is topical. Here, AI algorithms also play a crucial role in optimizing energy distribution through the network in real-time

How can we meet the increasing demand for AI power while minimizing the impact on the planet?

A: Data centers are constantly evolving to adapt to the demands of AI. Improving power distribution systems and energy efficiency within the data center helps minimize losses and deliver power to servers most efficiently. Operators are focusing on more energy-efficient hardware and software and diversifying power sources. Advanced power distribution units, intelligent management, high-efficiency power systems, and renewable energy sources enable data centers to reduce energy costs and carbon emissions. However, the extreme densities of AI servers lead to challenges related to cooling methods.

The transition from air to liquid cooling is imperative, primarily from a sustainability perspective. Liquid, Direct-to-Chip cooling, where coolant is circulated through servers to absorb heat, is rapidly gaining popularity. The advantages are numerous: from increasing the reliability and performance of the processor, saving space, increasing energy efficiency, improving the PUE coefficient, and reducing water use.

Data center operators can also use automation based on AI algorithms, analytics, and machine learning to find new opportunities to increase efficiency and decarbonize. By using data insights more effectively, we can drive new, more sustainable behaviors.

Here, I am primarily referring to DCIM, EPMS, BMS, and similar applications that reduce the risk of unexpected behavior and provide a digital replica of the System, which makes decisions easier.

One example is Equinix, which improved the energy efficiency of its data center by nine per cent using AI-based cooling. The company reduced energy consumption by regulating the cooling system more efficiently.

So, it is clear that AI applications are leading to a significant increase in electricity consumption in data centers at a time when they need to become more sustainable. However, AI simultaneously provides us with intelligence, with the help of which we will manage those same data centers more thoughtfully.

To conclude, by combining quality and efficient equipment with the contributions made by a monitoring system based on AI algorithms, data center owners, operators, and users can respond more efficiently to the demands of high-density AI clusters without risking energy efficiency, reliability, and sustainability.

Schneider Electric

WALK, RECYCLE, EARN TOKENS

Imagine walking through the city or riding a bike in nature while at the same time contributing to the city by getting one more tree, feeding an animal or simply winning a theatre ticket. In November 2023, the City&Me application was launched – an innovative platform designed to spread awareness about the importance of a sustainable future while motivating people to change their habits and the environment within the local community. The platform is the result of cooperation between Aleksandar Stamenković and Branko Krsmanović, who worked with a team of experts from the non-governmental, business and public sectors. Our interlocutor, Aleksandar, explained to us the spectrum of possibilities offered by their invention and how it can be helpful in the formation of smart and sustainable cities.

> Suppose you take 100,000 steps or cycle 100 kilometers in one month. In that case, the application automatically awards you a golden token that you can exchange for a seedling in the city park, which is marked in the digital green oasis and bears the user's name

Since its launch, City&Me has managed to gather more than 15,000 people and provide support through local and national companies, cities, international organizations, numerous experts, and partners. Although it was created in Niš, the success led the founders to think about other cities, with the next one possibly being Kragujevac, where there is exceptional cooperation through the City&Me chatbot.

The City&Me chatbot is designed to facilitate access to local news, such as information on public transport and details on cultural events or polls. The chatbot is integrated into the Viber application and can be used independently of the application services. Thanks to its integration into Viber, the City&Me chatbot reached a large number of users, namely over 100,000 people in Niš and Kragujevac.

There are also plans to expand the application in the region.

"We can confirm with certainty that at least one of the regional cities will start using City&Me services by the end of July 2024", said Aleksandar, without revealing which city he was talking about.

In terms of tokenization, City&Me uses a reward system to measure users' green activities. Suppose you

BOTH YOUNG AND OLD

People of different ages use the platform since demographics do not play a significant role. Older users actively participate by reporting local issues and walking, while younger users use the app to collect and exchange tokens.

Photographs: City&Me

take 100,000 steps or cycle 100 kilometers in one month. In that case, the application automatically awards you a golden token that you can exchange for a seedling in the city park, which is marked in the digital green oasis and bears the user's name. Furthermore, in cooperation with one of the companies, users win tokens by recycling electrical or electronic waste.

"Using tokens as an in-app currency creates a wide range of possibilities for users. Tokens can be exchanged for various rewards, services or discounts through the store available within the application. The prizes vary from theatre tickets, free meals and transportation discounts to seedlings planted in local parks or forests," explains Aleksandar.

Another very important function provided by City&Me is the aforementioned facilitation of communication and decision-making at the local level. Practically, the platform enables direct and fast information exchange so building managers can use the City&Me application to inform tenants about upcoming recycling campaigns. At the same time, they can communicate with public utility companies about waste collection plans. After utilities process the recycled material, the app allows buildings to be awarded tokens as a reward for their contribution to environmental protection.

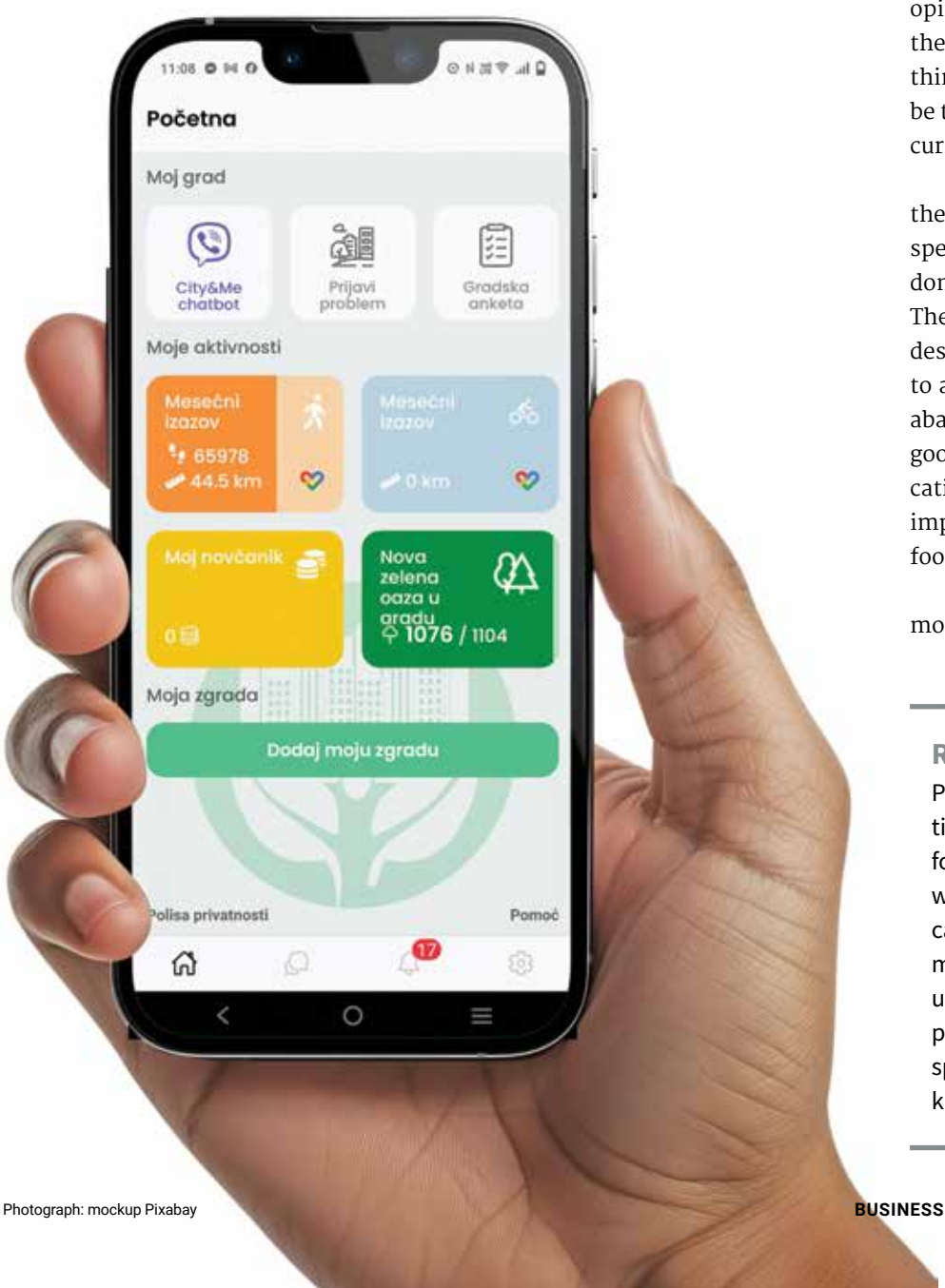
Conducting surveys, also a form of participatory decision-making, allows residents to express their opinions on various issues affecting their community. Polls and votes within the application are designed to be transparent and clearly display the current and final voting results.

One successful example of using the City&Me platform to implement specific initiatives is the campaign to donate food for abandoned animals. The application users expressed their desire to donate their earned tokens to a local campaign aimed at helping abandoned animals. Thanks to the good coordination within the application, the campaign was successfully implemented, and a ton of animal food was donated to the association.

City&Me is a perfect illustration of modern-day civic activism.

Prepared by Milica Vučković

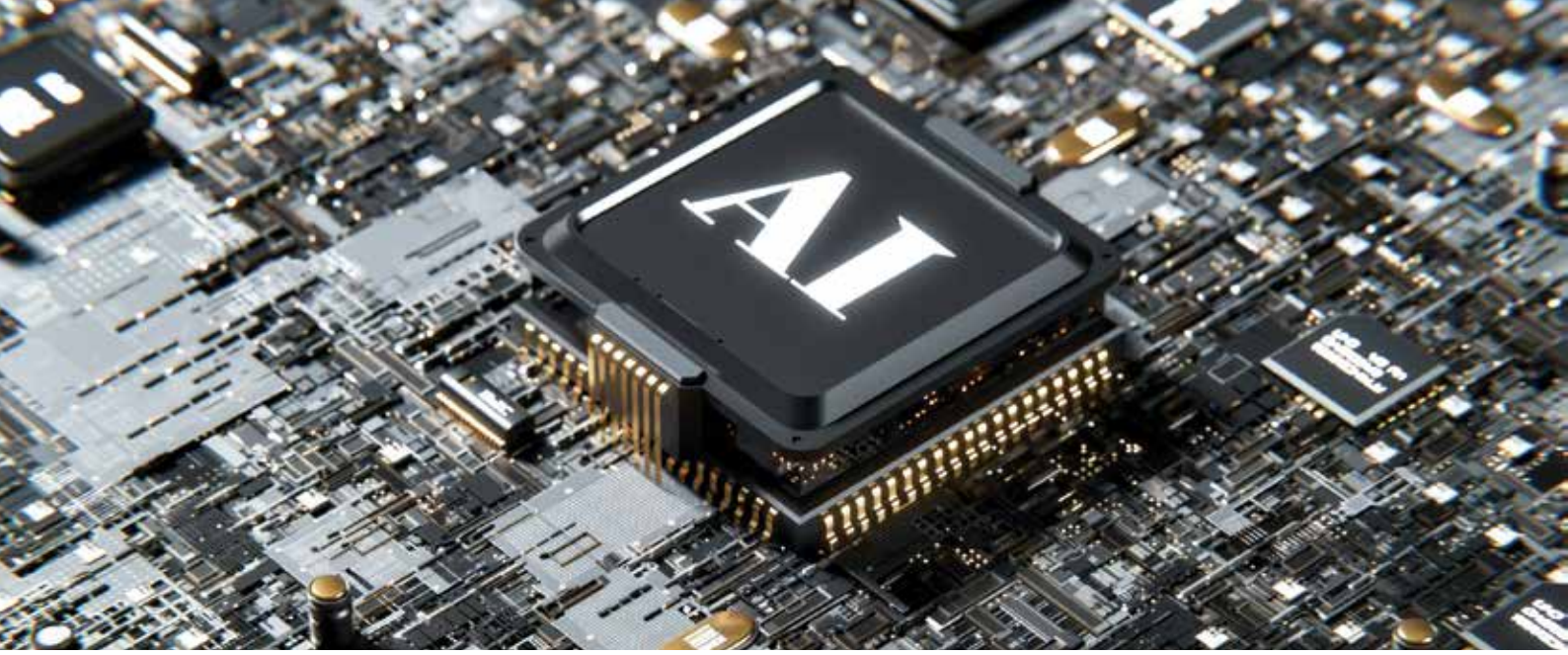
Aleksandar Stamenković i Branko Krsmanović
founders of the City&Me application



Photograph: mockup Pixabay

REWARDS FOR USERS

Partners included in the tokenization programme can reward users for certain activities. So, together with the EU Info Corner in Niš, a campaign was launched that promotes a healthy lifestyle and offers users over a hundred interesting prizes every month, including sports bottles, windbreakers, backpacks, and other products.



POSSIBILITIES OF ARTIFICIAL INTELLIGENCE IN ENVIRONMENTAL PROTECTION

Artificial intelligence (AI) is increasingly being used for environmental protection, offering ever-increasing possibilities. We cannot see and translate most of the connections that determine the state of the environment into equations. This is a prerequisite for understanding cause and effect. To acquire scientifically based knowledge, the solution lies in using sophisticated algorithms that underlie different areas of AI and can detect and quantify them.

We spoke about this with Professor Andreja Stojić, PhD, senior research associate at the Institute of Physics in Belgrade and lecturer at Singidunum University.

Q: In which areas can AI play a role in overcoming environmental challenges?

A: AI's role can be multiple in all segments related to the environment in which a large amount of quality data is collected scientifically, which implies

Photographs: (top) Unsplash/Igor Omilaev; (bottom) Pixabay/Wendy Corniquet

The application of AI in air quality management includes the development and implementation of systems for continuous data analysis, emission source identification, pollution forecasting, automated decision-making support and the creation of valuable data aggregations

an adequate depiction of the context from a large number of angles. In this sense, perhaps the closest segment is air quality because it means data of sufficient spatiotemporal resolution. The data include concentrations of pollutants, meteorological data, and data on people's mobility, as well as numerous political and economic indicators that show society's pulse that affects air quality.

Q: What is your evaluation of air pollution monitoring? Does it need to be improved, and if so, in what direction?
A: Society does not understand the complexity of the problem nor what needs to be done to improve the current situation. Let's imagine a situation where the treatment is taken out of the doctor's hands. Contrary to the need, environmental quality management is left to decision-makers who set up monitoring through regulations. However, the organization, expertise, ethics and ability of decision-makers result in rules that do not follow scientific research. Decades ago, research proved the presence of thousands of times more toxic, mutagenic and carcinogenic compounds than the number of types mentioned in the relevant regulations. This research recognizes the necessity of contextualizing air quality, including a large number of variables

ANDREJA STOJIĆ received his doctorate at the Faculty of Physics, University of Belgrade. The topic of his doctoral thesis was atomic and molecular physics and its application in environmental science. PhD Stojić is a senior research associate at the Laboratory for Environmental Physics, Institute of Physics in Belgrade and a lecturer of the Environment and Sustainable Development subject at Singidunum University. His core research areas include data and environmental science, focusing on artificial intelligence, atmospheric chemistry, and physics. PhD Stojić has participated in more than 20 national and international scientific and applied projects, including H2020 and Science Fund projects in environment and data science. He is the co-author of more than 100 publications indexed in relevant scientific databases. He is also a member of the music group Neverne Bebe.

Photograph: (Stojić) courtesy of Andreja Stojić

MULTIPLE HARMFUL EFFECTS OF POLLUTION

A huge number of factors in mutual interactions determine the state of the environment on the one hand and the health of people on the other, as well as their mutual connection. More than 99 per cent of the world's population breathes air of poor quality, while over two billion people suffer the consequences due to the bad quality of drinking water. The outcome of this way of life and the decisions we make on a personal and civilizational level results in over nine million deaths a year.

"The impact of pollution on health is not exclusively toxic. Pollution affects prenatal development, leads to genetic mutations and the development of many diseases, such as heart attack, lung cancer, acute and chronic respiratory or neurological diseases. It devastates biodiversity and the environment, exacerbates climate change, and has a harmful effect on the economy", says PhD Stojić.

or applying concepts of data analysis adequate for the analysis of complex systems. There are tens of thousands of different pollutants in the atmosphere of the urban environment, with hundreds belonging to the hazardous group. However, the regulations recognize single-digit prime numbers.

The representation of what we measure, the information based on which we acquire knowledge, is extremely small compared to what we would have to know if we adequately dealt with air quality. Improving the monitoring would have to involve increasing the number of types of pollutants that are measured and the number of measuring stations, adjusting regulations to modern scientific knowledge and concepts, establishing different ethical principles and strict application of regulations.

AI can contribute to more effective solutions to many problems, including those related to environmental protection, creating an environment for innovation, and increasing efficiency and sustainability in various sectors

Q: How can artificial intelligence contribute to reducing the concentration of air pollution?

A: Basically, the primary level of AI application involves the contextualization of phenomena, for example, the concentration of a certain pollutant in the air, using machine learning algorithms, then the explanation of the obtained models using explainable artificial intelligence, as well as different approaches to grinding and generalizing the results. In this way, we can understand the environmental conditions that lead to pollution, the scale of influence of emission sources, meteorological conditions, physical and chemical processes and many other factors that shape air quality.

The intermediate level involves simulations through virtual experiments that enable scenario development and prescription. This way,

Photograph: Unsplash/Curioso Photography

we can create a basis for preventive measures or planned action to reduce concentrations.

The final level involves integrating data, results, and their interpretation with overtrained language models, which enables further research through communication in natural language, generalization, and simplification and lowering to the decision makers' level. The application of AI in air quality management includes developing and implementing systems for continuous data analysis, emission source identification, pollution forecasting, automated decision-making support, and the creation of valuable data aggregations. Traditional air quality indices do not provide adequate information about the actual condition.

Q: How can we increase awareness of more significant contributions to environmental protection and pollution reduction? What is the future of the energy transition in the context of greater participation of artificial intelligence in those processes?

A: Our society does not understand the power of solidarity and cooperation. It is essential to build a chain, cooperation mechanisms, and an effective exchange of information between actors in the environmental protection process – from scientists, decision-makers and institutions to companies and individuals. People should take an active role in promoting sustainable practices and supporting initiatives that contribute to environmental protection, but also the pressure to raise the awareness, expertise, and responsibility of decision makers, especially scientists.

In terms of the future of the energy transition in the context of greater AI participation, there is great potential for applying these technologies to optimize energy systems, manage energy consumption, and find effective solutions to reduce the emissions of pollutants.

Q: Can AI alone, which, by the way, consumes large quantities of electricity and has a carbon footprint, be harmful to the environment?

A: Unfortunately, the world faces the dilemma of choosing less harmful options in many areas. For instance, improving air quality has been known to reduce atmospheric turbidity. A more transparent atmosphere lets in a more significant amount of solar radiation, increasing temperature and accelerating global warming. In the context of more intensive electricity use due to the broader application of AI, it is difficult to assess all the consequences. However, the benefits of application are undoubtedly much greater than the possible adverse effects on the climate system. AI can contribute to more effective solutions to many problems, including those related to environmental protection, creating an environment for innovation, and increasing efficiency and sustainability in various sectors. The benefits it can bring undoubtedly outweigh the potential negative consequences.

Interview by Mirjana Vujadinović Tomevski

Photograph: Unsplash/Andrea de Santis

NEWS FROM THE COUNTRY AND THE WORLD

FRENCH REACTORS TO SWITCH TO DOMESTIC RECYCLED URANIUM?

France is a country known for its nuclear reactors, which generate as much as 70 per cent of the required electricity.

In 2023, the country had 55 nuclear reactors. However, one nuclear power plant, on the Rhone River in the southeastern part of the country, has switched to sustainable nuclear power, using fuel made from recycled uranium. This revived the domestic uranium processing industry, with France allowing this nuclear plant to be involved in accomplishing the goal of reducing the consumption of natural resources by 25 per cent over the next decade.

When it comes to sustainable nuclear energy, France has substantial experience in this field. Reprocessed enriched uranium is the material obtained by processing used nuclear fuel from nuclear reactors, where the uranium is separated, enriched and then reused in the reactors. This reprocessing process is carried out at the factory in The Hague and in this way, nuclear fuel is efficiently used, according to World Nuclear News.

A total of four reactors in France have been certified to use this kind of enriched reprocessed uranium.

EDF (Électricité de France), the state-owned power company, is now implementing a strategy aimed at the use of recycled uranium, which should, in addition to natural resources, reduce CO_2 emissions by 30 per cent over the next decade, compared to the use of non-recycled nuclear fuel, reports the world media.

In addition to preserving natural resources, and reducing CO_2 emissions, which contributes to sustainability and circularity, this strategy increases France's energy independence.

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DESALINATION SOLVES THE PROBLEM OF WATER SHORTAGE BUT REQUIRES THE USE OF A LARGE QUANTITY OF ENERGY

Water and energy are interdependent and both are critical resources. Namely, water is used in energy production, so the energy sector accounts for about 10 per cent of the total use of fresh water, according to the International Energy Agency (IEA).

In contrast, energy is also needed for water supply, which is mostly extracted from lakes, rivers and oceans, transported through pipes and canals, then filtered and finally delivered to the end user.

At a time when water scarcity is becoming a daily occurrence around the world, alternative ways to supply it are being investigated. One very common method is desalination, that is, the separation of salt from seawater to obtain drinking water. This process is energy intensive, often requiring using over 1kWh of power per cubic metre of filtered water. IEA data shows that global demand for energy used for desalination has almost doubled since 2010 and based on current trends, it can be expected to double again by 2030.

According to reports, about 21,000 desalination plants are currently active in close to 150 countries, with half of them located in the Middle East and North Africa. More specifically, desalination covers most of the daily water needs in many countries such as Qatar, Kuwait and Saudi Arabia. It is interesting to note that Saudi Arabia plans to build a completely new city that will house nine million people by 2045 and that will depend on desalinated water from the Red Sea and the Gulf of Aqaba to supply the city's population.

The problem is even greater because, for example, in the Middle East more than 90 per cent of the energy used for these purposes comes from fossil fuels. Precisely for this reason, as one of the solutions for the preservation of these two critical resources, the transition from fossil fuels to renewable energy sources that reduce energy needs related to water is frequently mentioned.

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Photographs: (left) Unsplash/Frédéric Paulussen; (right) Unsplash/Chinh Le Duc

ELECTRIFICATION OF RAIL TRAFFIC – HOW MUCH OF IT IS IMPLEMENTED AND WHY IS IT IMPORTANT

The railway is considered a more environmentally friendly transport mode regarding emissions. However, to meet the climate change targets, additional efforts have to be invested to make this kind of transport even more sustainable.

In this sense, a much wider electrification of railways is needed, i.e. equipping the railways with electrical power systems that allow trains to use electricity instead of traditional fuels such as coal and diesel. Electric trains are powered by power lines placed above the tracks or by a third rail located along the track.

Data published by Eurostat show that electrified railway lines have increased by around 30 per cent compared to 1990. More precisely, in 2022, the length of such railways in the EU countries was 115,000 kilometres, an increase of 88,000 kilometres in 2021.

If we consider that the total length of railways in 2022 was 202,000 kilometres, the share of electrified railways was over 55 per cent. The 2021 data show that Switzerland takes first place in the extent of railway electrification as almost all of its railroads are electric. Luxembourg was second and Belgium third.

Electrification is a key way of modernizing the railway network in terms of environmental protection.

As reported by the media, other countries around the world are striving for the same goal, so for instance, India has set itself the goal of fully electrifying its heavy-duty railroads by 2025. We should also mention China, with a significant number of railways becoming electric.

Besides environmental benefits, railway speed can be improved in this way too. Although the focus here is on reducing air pollution, we should also mention noise pollution, which is particularly harmful to animals. Namely, the tracks often pass through nature and wild areas, and electrification would reduce the noise and vibrations produced by trains.

Katarina Vuinac

CELLULOSE PLASTIC FOR A HEALTHIER ENVIRONMENT

The idea of bioplastics is not new – for some time, environmentally oriented scientists have been trying to develop a fully recyclable replacement for plastic as we know it today.

Researchers from Hokkaido University in Japan significantly contributed to these efforts by developing a suitable method for making various polymers from plant cellulose.

Cellulose is a long-chain polysaccharide polymer, which means it consists of multiple sugar groups linked by chemical bonds. To create a new class of recyclable polymers, the Hokkaido University team developed chemical processes to vary the structure of cellulose-derived polymers and create different materials for a range of applications, the university said in a press release.

One of the most abundant components of biomass obtained from plants is precisely cellulose since it forms a key part of the solid cell walls of all plant cells. As such, cellulose is abundantly available from plant wastes such as straw and sawdust, so its use as a raw material for polymer production should not affect the availability of agricultural land for food production.

Researchers believe that the new bioplastic, which is entirely stable and recyclable, will stand in the way of plastic waste, which is one of the biggest polluters of the environment.

"Our biggest challenges were controlling the polymerization reaction that links smaller monomer molecules and obtaining polysaccharide materials that are stable enough for common applications while still being able to be broken down and recycled under specific chemical conditions", says Associate Professor Feng Li, one of the researchers.

Professor Li adds that the biggest surprise during the research was the high transparency of the polymer films they made, which could be crucial for the further application of this bioplastic.

Milena Maglovski

Photographs: (left) Unsplash/Jacques Bopp; (right) Unsplash/Lena Myzovets

PRODUCING HYDROGEN FROM IRON-RICH ROCKS WITHOUT EMITTING CARBON DIOXIDE?

Hydrogen is often said to be the fuel of the future because its combustion does not emit carbon dioxide. However, for now, most hydrogen gas is still produced from natural gas, which leads to the creation of these emissions during the production process. Scientists from the University of Texas in Austin have found a way to make hydrogen production even more sustainable.

They have started producing hydrogen from iron-rich rocks with zero CO_2 emissions. If the project proves successful, it could be a turning point in the energy transition and form a foundation for a new type of hydrogen industry, the so-called geological hydrogen. Although this is not a brand new procedure, it has not yet been attempted and applied on an industrial scale.

A team of scientists received a substantial grant from the US Department of Energy to investigate the possibility of producing hydrogen from different rock types across the United States in collaboration with scientists from the University of Wyoming – School of Energy Resources.

What kind of research do scientists want to conduct?

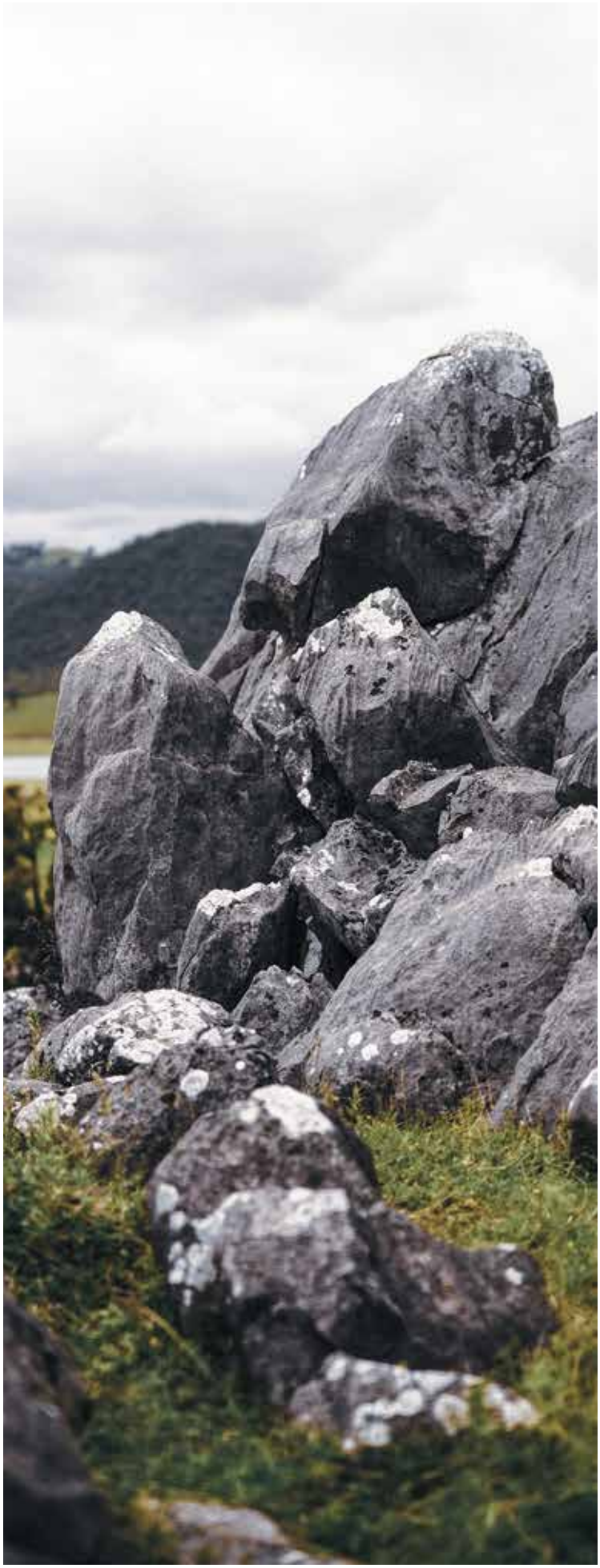
Serpentinization is a natural geological process during which rocks rich in minerals create new minerals in the presence of water molecules and under certain temperatures and pressures. Lead is released as a by-product during the process.

Scientists will try to find catalysts to speed up the geological process. To clarify, catalysts are substances that expedite chemical reactions. Catalysts are not consumed but can be reused.

If they manage to find suitable catalysts, scientists believe that this process would have the potential to significantly increase hydrogen production on a global scale.

Countries worldwide have been investing significant efforts recently to improve the production of green hydrogen. Only recently did Germany and Algeria announce that they would establish a bilateral hydrogen working group. At the same time, Egypt signed seven Memoranda of Understanding with international developers stipulating the use of green hydrogen and renewable technology. The European Union is also working on projects encouraging cooperation in developing hydrogen infrastructure.

Katarina Vuinac



Photograph: Unsplash/Maxwell Ingham

WHY IS IT IMPORTANT TO IMPROVE ENERGY EFFICIENCY IN AFRICA?

Africa's population is growing faster than any other region worldwide, with electricity demand expected to increase by 75 per cent by 2030. To ensure that Africa is sustainable, the continent must have universal access to modern energy services by 2030. More precisely, current progress must be expedited at least threefold, according to the International Energy Agency (IEA).

To this end, the IEA held a training week in Nairobi on energy efficiency policies in developing African countries, supported by the Kenyan Ministry of Energy and Petroleum, as well as the African Development Bank (AfDB). The event brought together close to 200 policymakers and energy experts from across the continent. On the occasion, it was pointed out that energy efficiency still played a key role in improving living standards worldwide while at the same time contributing significantly to the accomplishment of climate goals.

Kenya has made significant progress in developing renewable energy and facilitating access to electricity, with RES accounting for nearly 90 per cent of the energy produced and consumed in 2021. Access to electricity has doubled from 2013 to 2022, i.e. from 37 to 75 per cent. Precisely because of this increase, the implementation of energy efficiency is very important.

The training week is part of the IEA Energy Efficiency in Emerging Economies Programme. Through this programme, the IEA cooperates with six of the world's largest developing economies to improve energy efficiency. The data shows that Brazil, China, India, Indonesia, Mexico, and South Africa together consume about one-third of the world's energy, and predictions are that this will rise to 40 per cent.

This cooperation has five key implementation ways. Support for policy development involves focusing on the daily needs of officials responsible for implementing energy efficiency policies. There are also thematic workshops that bring together officials and experts from multiple countries to explore specific topics. There are also group training sessions for officials and future leaders and webinars that provide access to numerous experts. Finally, online training focusing on learning about energy efficiency indicators is available, too.

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SOLAR ENERGY FOR SCIENTIFIC RESEARCH IN AUSTRALIA

The Australian Nuclear Science and Technology Organization (ANSTO), located in Clayton, about 20 kilometres from Melbourne, has taken a significant step in the energy transition, and has become an example of green transformation in the scientific community. As one of the leading national research institutes, ANSTO has recognized the need to reduce its operational costs as well as its impact on the environment, especially if one takes into account the large amounts of electricity required for such research.

ANSTO is home to the Australian Synchrotron, an advanced research facility using particle accelerator technology. By accelerating electrons close to the speed of light, the synchrotron produces intense light that allows scientists to study in detail the structure and properties of materials at the atomic and molecular levels. Medicine, biology, chemistry, engineering and physics are just some of the sciences where discoveries such as new materials or new drugs are made.

In order to produce and consume electricity more efficiently, economically and cleanly, ANSTO has installed more than 3,200 solar panels on the roofs of its facilities, including on the impressive circular roof of the main synchrotron building. The 6,600-square-metre roof covered with solar panels will allow ANSTO to produce more than two million kWh of electricity annually, while reducing CO_2 emissions by more than 1,680 tonnes every year until 2029, according to the organization's website.

By using solar energy, ANSTO significantly reduces operating costs, which allows for additional investments in research capacity and expansion of scientific capabilities, while preserving the planet for future generations.

Energy Portal

Photographs: (left) Unsplash/Hu Chen; (right) Unsplash/Chirayu Trivedi

SCHNEIDER ELECTRIC: DIGITALIZATION AS THE KEY TO THE ENERGY TRANSITION

The Innovation Summit of the Schneider Electric company was once again a gathering place for the latest solutions in the field of automation, electrification and digitalization. Representatives of numerous companies met in Paris and were presented by Schneider Electric, a leader in the digital transformation of energy management and automation, with new solutions designed to help them define strategy, digitize and decarbonize their operations and accelerate the achievement of sustainability goals.

This event was an opportunity to talk with Hélène Macela-Gouin, Deputy Director of Schneider Electric in France, who guided us to the importance of digitization and automation in the energy transition process and introduced us to the latest goals of Schneider Electric. According to her, digitization is the best way to achieve energy efficiency. Many believe that reducing electricity consumption is enough to mitigate the consequences of climate change. Still, Gouin notes that the way we use electricity is also significant in addition to reducing consumption. The answer, he says, lies in the automation and digitization of consumption.

"We have to realize a future that suits everyone. We can have lower and better consumption, and we at Schneider Electric are focused on both. Innovations allow us to reduce building consumption through automation, passive infrastructure, installing renewable energy sources on roofs, and digitalizing electricity consumption," said Hélène Macela-Gouin.

Circular economy in the focus of Schneider Electric

Our interlocutor also spoke about data centers whose sustainability is the focus of the company. Data centers are constantly expanding to meet the needs of digital lifestyles and more intelligent buildings and industries. Schneider Electric aims to bring data centers together with the circular economy.

"When we talk about circularity, at Schneider Electric, we achieve the same quality and resilience of

our products with a reduced environmental impact and lower carbon dioxide emissions. We can be very efficient operationally, but the issue of building data centers must also meet sustainability criteria. This is a more complex problem, so we looked for a solution in the circular economy. UPS devices manufactured this way have the same quality, durability and warranty as all our products, with a smaller carbon footprint," Gouin said.

This way, the company reduces its electronic waste and greenhouse gas emissions. Schneider Electric's ambition is to create a road map that will enable the broader application of the circular economy at all European locations.

Launched in 2016, the Schneider Electric Innovation Summit showcases the company's latest innovations, solutions and partnerships that drive the future of automation, electrification and digitalization.

Bojan Stević

Photographs: Schneider Electric

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- Jan Sietsma, Macel plin d.o.o.
- Laslo Farkas Višontai, Podzemno skladište plina d.o.o.
- Brett Henkel, Svante Technologies Inc.
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BY INVESTING IN SUSTAINABILITY, WE'RE IMPROVING THE NATURAL AND BUSINESS ENVIRONMENT

Delta Holding is successfully implementing its ESG strategy, which contributes to environmental protection and the improvement of the quality of life in the community. Tijana Koprivica, the company's Sustainable Business Manager, spoke about its ESG goals and the projects and activities through which they are achieved.

Q. How does Delta Holding apply ESG criteria in its business operations, and which goals and strategies have you set?

A. We have formed an ESG team, made up of colleagues from all our subsidiaries, which has been tasked with creating strategic plans and analyzing and implementing innovative solutions in the fields of environmental, social, and governance. A strategy for sustainable development is part and parcel of the business strategy of all the subsidiaries of Delta Holding. Through defined environmental, social and plans for the improvement of business management, the company has set ambitious but realistic goals of having a positive effect on nature and society, as well as on the improvement of the economic environment on the markets where it conducts business.

Q. Which projects are most important and of most interest to the public, as well as the company, when it comes to environmental protection?

Photographs: Delta Holding

The glass façade of Sava Center, which used to be made of single-pane glass, has been completely replaced with energy-efficient triple-pane glass, and we've also installed cutting-edge heating and cooling systems

Tijana Koprivica
Sustainable Business Manager at Delta Holding Company

A. Through our environmental protection strategy, we are planning to reduce the consumption of energy from fossil fuels by 60 per cent by 2030. We have been investing in renewable energy sources since 2021 in order to achieve that goal. We currently have solar power plants at 15 locations, with a total capacity of around 5 MWh. We are planning to install solar panels at another eight locations this year. Apart from solar energy, we also use biomass in our business operations. In our factories, Seme Sombor

and Dunavka, we use corn cobs, sunflower seed shells and soybean straw as energy sources. By switching to renewable energy sources, we'll also reduce emissions of harmful gases. We are planning to reduce the amounts of generated waste and disposed waste and packaging, and to fully utilize waste as raw material for obtaining new products.

One of Delta Holding's members is also Delta-Pak, which provides services as an operator for managing packaging waste and consultancy in the fields of environmentalism, chemicals, and transportation of dangerous goods. It provides this service not only to Delta Holding members but also to external clients.

Q. Do you apply sustainability standards in the construction of new facilities as well?

A. Our office building, Delta House, has the LEED Gold certification, and it was constructed using recycled materials such as UNIDOM plastic balls. Its façade is made of state-of-the-art materials, and it has been fitted with a cutting-edge ventilation system with optimal energy consumption and ionizers, which means the air quality is excellent. Two small solar power plants have been installed on the roof, along with a tank for rainwater, which is used as technical water. Sava Center is in the process of obtaining BREAM certification, and it's also the first building in Serbia to be assessed in terms of compliance with EU Taxonomy criteria. The building's energy efficiency was greatly improved during its renovation. The glass façade of Sava Center, which used to be made of single-pane glass, has been completely replaced with energy-efficient triple-pane glass, and we've also installed cutting-edge heating and cooling systems. 912 solar panels have been installed along the entire roof.

Q. Is investing in sustainable development a huge cost for companies, and does it have any benefits?

A. Companies that don't adhere to sustainability principles cannot survive on the market. Hence, we don't view investments in sustainable business as an expense; instead, we view them as investments. Companies whose business operations are not in line with sustainability principles are in danger of losing quality staff, long-term business partners, buyers, and investors, and they're also likely to encounter higher operating expenses as a result of energy inefficiency, additional fees for the pollution of the environment, emissions of harmful gases, etc. Specifically, in addition to contributing to the reduction of emissions and the consumption of energy obtained from conventional sources, investing in renewable energy sources is also going to help reduce our dependence on energy suppliers and our costs for energy sources, and it will also ensure financing from the so-called green sources.

Delta Holding

TOGETHER FOR THE PRESERVATION OF NATURE'S DIVERSITY

The Regional Office of the International Union for Conservation of Nature (IUCN) for Eastern Europe and Central Asia (ECARO) was founded twenty years ago. During that period, its goals have been adapted to suit climate change and the increased loss of biodiversity, but also finding strategies to solve them. They rely on the knowledge and resources of more than 1,400 members and 16,500 experts in seven IUCN expert commissions. Some of the criteria for membership in the Union imply that the interested party supports its goals, that it has already contributed to the preservation of nature with its activities and that it works wholeheartedly to preserve its integrity and diversity. Joining IUCN facilitates connection with a growing number of member organizations and the scientific community, advising on developing relevant policies, sharing knowledge, developing capacities, and implementing projects.

Oliver Avramoski, Regional Director of IUCN ECARO, was recently appointed to that position at the time when the Belgrade office celebrates two decades of operations, which for him is an honor and a responsibility, as he joined a motivated team of experts who have been working dedicatedly for the protection of nature and biodiversity for years in the region, together with members and partners. We talked with him about the

Šar planina National Park, North Macedonia

Photograph: Daniel Bogner

> Our region lags significantly in terms of taking care of protected areas and the restoration of degraded ecosystems

status of nature protection in the region, how to devote ourselves more to its preservation, the implementation of the Biodiversity Protection Strategy, and the challenges in the fight against climate change and plans.

Q: Could you please comment on sustainability and biodiversity protection in the Western Balkans and Serbia? How can we be more committed to preserving nature and natural resources?

A: The region of the Western Balkans, including Serbia, is highly abundant in numerous species and habitats, including many species found only in our area, such as Pančić's spruce, Balkan lynx and two species of ramonda. Our survival depends on diverse living habitats and functioning ecosystems because they provide us with water, air, medicine, and food and help us adapt to climate change. Nevertheless, numerous studies point to significant pressure on ecosystems while the number of species and habitats in the region is decreasing. Biodiversity and ecosystem services are rarely taken into account in decision-making. The relevant institutions face numerous challenges regarding protecting and managing resources or enforcing environmental laws. To this end, we are collaborating with members and line institutions to analyze the nature protection system in Serbia in partnership with the Together for the Environment project. The received recommendations will guide us in providing systemic support to institutions and managers of protected areas in Serbia.

Q: The EU 2030 Biodiversity Protection Strategy is the first step towards creating a more sustainable and resilient society. How is the Strategy implemented, and what are the biggest challenges?

OLIVER AVRAMOSKI has abundant experience and more than three decades of experience working in the field of nature protection. He worked in the IUCN ECARO office from 2015 to 2018 as a programme coordinator for protected areas. Before being appointed to the new position, he was a coordinator within the PONT Foundation. Before that, he was the head of the Department for Nature Protection in the Galičica National Park. Mr Avramoski received his doctorate from the Central European University.

REGIONAL FORUM

In addition to marking the 20th anniversary of the regional office this September, IUCN is holding a Regional Forum with members, members of expert commissions, and partners to prepare for the upcoming IUCN World Congress on Nature Conservation, which will be held in October 2025.

Photograph: (Avramoski) courtesy of Oliver Avramoski

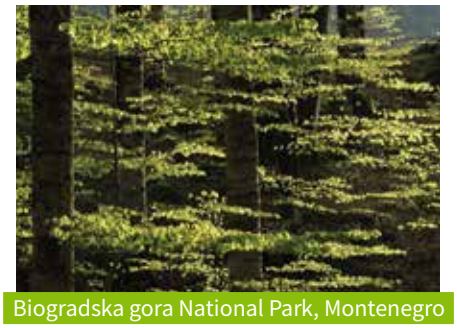
A: In late 2020, the European Commission adopted the 2030 Biodiversity Protection Strategy, which, along with the European Green Deal, provides guidelines for developing policies for the EU, setting the goals and ambitions regarding nature conservation and sustainable use of natural resources. The European Union has expanded the network of protected areas to protect at least 30 per cent of land and sea, with 10 per cent under strict protection. The Green Agenda for the Western Balkans seeks to align the region with the EU's ambition to become climate-neutral by 2050 and key elements of the European Green Deal. It is an essential political framework for nature conservation in our region. The Biodiversity Task Force of Southeast Europe (BDTF SEE), whose work we coordinate, manages the Green Agenda's pillar related to protecting nature and biodiversity. There are many challenges in accomplishing the goals outlined in the 2030 Strategy, including the unsustainable use of land and sea for urbanization, agriculture, and development purposes, the impact of climate change, pollution, and lack of financial support. However, the cessation of unsustainable practices will not lead us to accomplish our goals. It is necessary to restore degraded habitats and improve the state of nature and the environment. Our region lags significantly in terms of taking care of protected areas and the restoration of degraded ecosystems.

Q: What direction should the vision of the Convention on Biological Diversity on "living in harmony with nature" take by 2050?

A: Under the auspices of this Convention, the international obligations on the preservation and restoration of biodiversity, which were negotiated in December 2022, include the restoration of 30 per cent of degraded ecosystems and the preservation of 30 per cent of land and sea. The Convention's vision is very ambitious but necessary. Integrating nature protection and conservation into development strategies is a safe and cost-effective way to unlock the enormous potential of sustainable development, which will have multiple benefits for our economic progress, environment and society. The IUCN plays a significant role in the

Special Nature Reserve Gornje Podunavlje, Serbia

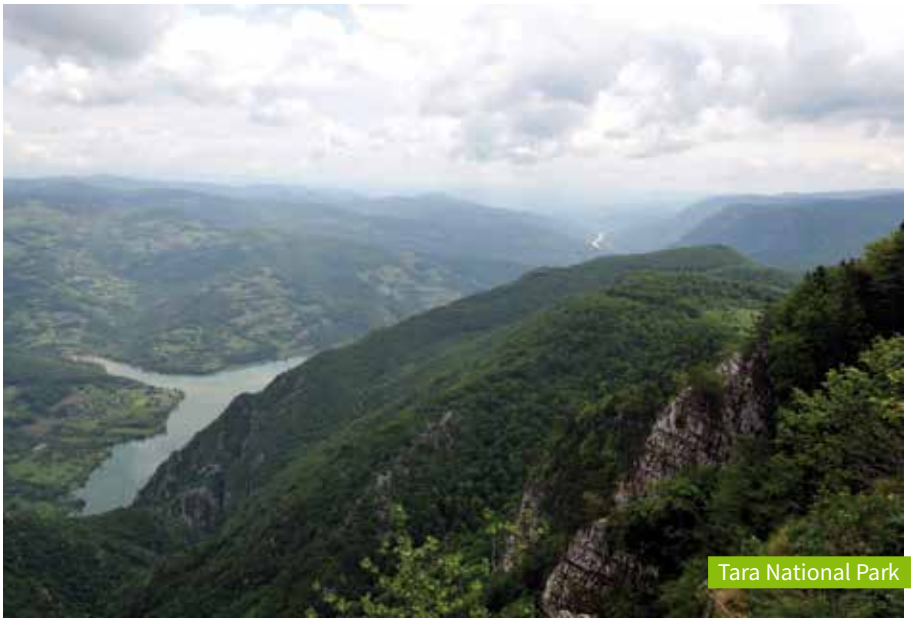
Vjosa National Park, Albania



Biogradska gora National Park, Montenegro

Special Nature Reserve Gornje Podunavlje, Serbia

Photographs: (middle) Boris Erg; (below left) Gregor Subic; (bottom left) Boris Erg; (bottom right) Boris Erg


Tara National Park

Nature-based solutions can provide more than one-third of the necessary climate change mitigation measures by 2030

protection of biodiversity and regularly updates the IUCN Red List of Threatened Species – the most comprehensive source of information on the global conservation status of plant, animal and fungal species and measures the level of achievement of the Convention's goals. There are many such species, so coordinated work under the auspices of the Convention at the national, regional, and global levels is necessary to restore their status through successful protection measures and remove them from the IUCN Red List of Threatened Species.

Q: What are the biggest challenges in the fight against climate change? One of the ways to reduce the negative consequences of climate change is by using nature-based solutions. To what extent can they influence the reduction of negative impacts?

A: Climate change is one of the biggest challenges facing nature and humanity. Last year was the hottest on record. The latest report of the International Panel on Climate Change confirms that to stop this increase in temperature at 1.5°C; we need to reduce global CO_2 emissions by 45 per cent by 2030, compared to the 2010 level and reach net zero emissions by 2050. This requires ending all fossil fuel subsidies, ending the use of coal and reducing the consumption of other fossil fuels.

One of the ways is the application of nature-based solutions. Following the IUCN Global Standard, these solutions are activities aimed at the protection, sustainable management, and restoration of natural or modified ecosystems, which solve social challenges while ensuring and generating benefits for humans and biodiversity. For example, planting new and restoring old forests can help reduce gas emissions, while preserving coastal ecosystems such as wetlands and coral reefs can help reduce flood risk and boost the resilience of local populations. Nature-based solutions can provide more than one-third of the necessary climate change mitigation measures by 2030.

Q: What plans does the regional office have for the coming period?

A: We have ambitious plans. Our goal is to regionally contribute to the protection of 30 per cent of the planet by 2030 and the sustainable management of protected areas. We also work together with members and collaborators to preserve land and marine ecosystems and wild species and restore degraded ecosystems. This year, we are committed to expanding the program in Central Asia and opening an office in Uzbekistan. Implementation of nature-based solutions is at the forefront of our programme in the Western Balkan countries and the wider region. The coordination of BDTF SEE is of great importance to achieving a positive change and boosting action in nature protection in the Balkans, as well as the efficient and consistent implementation of the Green Agenda programme.

I am confident that with joint effort and the support of the membership and partners, we will achieve significant results in preserving nature and biodiversity in the region and contributing to sustainable development and green transition.

Interview by Mirjana Vujadinović Tomevski

Photograph: (top) Boris Erg

CARBON FARMS MAKE AGRICULTURE MORE SUSTAINABLE

Greenhouse gas emissions cause several negative consequences on the planet, such as air pollution, increasing ocean acidity and perhaps the most talked about problem – global warming. Research conducted in almost all corners of the world showed that agriculture was responsible for these emissions.

That is why world scientists are searching for ways to make agricultural practices more sustainable by applying the principles of regenerative agriculture. Although sustainable ideas are implemented chiefly in distant countries, one idea emerged in Serbia recently. This is the story of Tara Lazarević, a grammar school student from Zaječar, who used her time and knowledge to find practical solutions to make our nature healthier.

A childhood spent in nature and playing and helping grandparents with their garden awakened Tara's love for natural sciences in elementary school, which later spontaneously developed into a passion for ecology. About ten years later, Tara's responsibility towards nature comes to the fore, primarily through participation in the World Environmental Protection and Sustainable Development. When contemplating what topic to present at the competition, Tara looked for solutions that would be more innovative than those that everyone knew about for the most part. Her final choice was to present the idea of designing carbon farms in Serbia.

SANU AWARD

Tara received the Serbian Academy of Arts and Sciences (SANU) Award for the second year running. "I have to admit that I am extremely glad that there are people who recognize talented and hardworking children and reward their successes. The media giving their space so a wider audience can see these ideas means a lot to me. The effort pays off and does not go unnoticed, giving me the strength to continue with research and learning. I believe other children deserve attention and space, and I hope they will get it soon", says Tara.

Photographs: courtesy of Tara Lazarević

Carbon farms and farms as we know them are very similar at first glance, but it's the small changes that make a big difference and make carbon farms more sustainable

Tara Lazarević
grammar school student from Zaječar

What are carbon farms?

Explaining the broadest meaning of the term, Tara says that carbon farms and farms as we know them are very similar at first glance, but it's the small changes that make a big difference and make carbon farms more sustainable. As the name suggests, these are farms that have a greater capacity to retain carbon in the soil. This is achieved in various ways, such as applying composting, growing and covering certain crops, and more.

"Given that each family throws away approximately 30 per cent of food that could be composted, special containers would be placed in the surrounding areas for the disposal of such waste, and they would be transported to the farms every two to three days," explains Tara.

Such farms would be located over much larger areas than usual and not intended for personal use. Another important prerequisite that needs to be met will make carbon farms different. Namely, the area around farms requires afforestation and planned grazing, while factories will have no place in the immediate vicinity. As Tara states, the focus of carbon farms is on reducing excess carbon, but they would also contribute to solving other problems. Given that the greenhouse effect promotes fires, droughts and floods, the widespread use of such farms would impact mitigating weather disasters. Furthermore, the enriched soil would bring higher yields, which would be donated to those who do not have enough food, thereby alleviating the problem of hunger and poverty.

While preparing for the competition, Tara pointed out that a special challenge was finding and using professional literature because some texts and videos were in Japanese. Her persistence translated into a successfully presented idea. However, sufficient funds must be in place for this idea to be more widely implemented. Tara adds that she also needs support from a team of experts in ecology, chemistry, forestry, engineering, design, and other fields. Their knowledge is essential for examining the selected area and implementing the carbon farm solution later.

"I hope that people will recognize the importance of this idea, and I sincerely believe that in the future, there will be room for progress in this segment", said Tara.

This is not the only environmental project in which she participated. She also contributed to local projects, such as cleaning Grliško Lake. At the moment, Tara is focusing on which university to study at. As she pointed out, engineering is an option for now, given that it can be applied in many fields.

Prepared by Katarina Vuinac

MT-KOMEX BUILT THE FIRST POWER PLANT IN THE EUROPEAN UNION

The company MT-KOMEX built a photovoltaic power plant in Sisak-Moslavina County in Croatia. For the first time, the company worked within the borders of the European Union, thus expanding its operations outside the territory of the Republic of Serbia. The project is located in the city of Novska, and it is a solar power plant on the roofs of buildings, with a total power of 280 kW AC and 340,625 kWp, for the investor Thermo Stone d.o.o. Novska. The construction of the solar power plant was completed in March of this year and put into operation.

This time, the company opted for Luxor Solar 545 Wp panels, Fronius inverters and K2 Systems construction for pitched roofs made of TR sheet

Regarding equipment, the panels on the roofs are oriented southwest and northeast, with a slope that follows the roof line. This time, the company opted for Luxor Solar 545 Wp panels, inverters from Fronius

Photographs: MT-KOMEX

The engineers in charge of this task had to report the works and keep a construction diary according to their own standards. In Croatia, the diary is kept exclusively through the e-Gradjani portal, which requires a building permit number, which is another difference

a Rulebook on simple buildings, based on which it is not necessary to have supervision, report works, or keep a construction diary, which is very similar to our rules. As for the project on which the expert team of the MT-KOMEX company worked, the engineers in charge of this task had to report the works and keep a construction diary according to their standards. In Croatia, the diary is kept exclusively through the e-Građani portal, which requires a building permit number, which is another difference. One of

and construction from K2 Systems for pitched roofs made of TR sheet.

The electricity produced on the roofs will be used exclusively for their own needs and will not be sent to the distribution network.

As the company was operating within the borders of the European Union for the first time, it is interesting to point out the differences and challenges they faced. However, there are no drastic variations in business.

Procedures and regulations

The works were carried out based on the prepared Main Project of electric power installations and the Electric Power Approval (EES) of the Croatian Electricity Company (HEP). The requirements and conditions of the EES had to be respected, and certain studies, one of which was the Study on the impact on the electric power network, also had to be carried out.

The procedure for building a power plant in Serbia is very similar. To begin with, Croatian Electricity Company is a counterpart to EPS, while EES is similar to UPP—Conditions for design and connection. The only difference is the slight difference in the aforementioned Study that needs to be prepared.

Essentially, both EES and UPP documents are necessary when planning, designing and implementing infrastructure projects and certain permits, such as connecting the facility to the power grid. Therefore, their goals coincide, while the terminology is the biggest difference.

When simpler projects are carried out without a building permit, there is the key challenges was actually the export of equipment, where export customs clearance from Serbia and import customs clearance for Croatia were done.

MT-KOMEX is an expert and reliable partner in the construction of solar power plants. During many years of business, the company has built and delivered equipment for more than 200 solar power plants on the ground and on roofs, the total installed power of which is more than 120 MW.

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

Prepared by Milica Vučković

GREEN PROJECTS OF SERBIAN SCIENTISTS – BIOPESTICIDES FOR PROTECTION OF TREES FROM DEADLY PESTS

The spongy moth is one of the most dangerous forest pests in Europe, Asia, North America, and Africa. This invasive pest can weaken and destroy trees by defoliating, i.e. destroying the leaves. A spongy moth larva can eat up to one square meter of foliage per day. During their infestation, which usually occurs at regular intervals of three to five years, complete loss of foliage can occur over a wide geographic area.

From 1862 to 2018, there were 18 infestations of spongy moths in Serbia, some of which had the proportions of a natural disaster, such as those that occurred from 1995 to 1998, when spongy moths were found on over 500,000 hectares of forests and orchards.

Another serious threat to forests and crops comes from various species of Phytophthora that attack plant roots. Phytophthora species are oomycetes, relatives of algae and fungi-like organisms. Phytophthora can cause up to 100 per cent losses in many plant species. Billions of euros are spent annually to alleviate the consequences of these diseases. In addition to the direct economic damages, there are far greater environmental damages, which are difficult to calculate.

A team of scientists from the Materials Department of the Institute for Multidisciplinary Research and the Faculty of Forestry, University of Belgrade, headed by Goran Branković PhD, scientific advisor at the Institute for Multidisciplinary Research, University of Belgrade, under the auspices of the PestFreeTree project, deals with the integral protection of woody plant species by applying ecologically acceptable biopesticides against pests that attack the

Photograph: Pexels/Pille Kirsi

leaves (spongy moths) and the root (phytophthora).

PestFreeTree, a project financed by the Republic of Serbia Science Fund as part of the Green Program of Science and Business Cooperation, focuses on the development of new natural and environmentally friendly biopesticides that can be used in forests, parks, nurseries, and orchards and thus protect the environment from unwanted pests, as well as soil, water and air pollution caused using conventional pesticides. The project's goals align with the relevant European Commission strategy, which, in June 2022, called for a 50 per cent reduction in the use of chemical pesticides by 2030. Our solution is based on the recent patent that was developed initially for active packaging. Still, the exact mechanism of encapsulating active components in a biopolymer matrix can be applied to biopesticide formulations. All active components will be essential oils and plant extracts that exhibit repellent or have lethal effects on targeted pests.

Although the use of essential oils and plant extracts as active components is already known in pest control, the main disadvantage of their use is the short-term effect due to their instability and rapid evaporation. Our innovative concept involves nanoencapsulation of active substances in a biopolymer matrix and their slow release over a long period from 10 days to several weeks. In this way, their prolonged effect and protection from atmospheric conditions are achieved. The project's main results will be two technical solutions for new biopesticides against Lymantria Dispar and Phytophthora species.

> Our innovative concept involves nanoencapsulation of active substances in a biopolymer matrix and their slow release over a long period from 10 days to several weeks

> PestFreeTree, a project financed by the Republic of Serbia Science Fund as part of the Green Programme of Science and Business Cooperation, focuses on the development of new natural and environmentally friendly biopesticides

Forest protection is of national interest and strategic importance in every country. All threats to forest health should be taken seriously, as forests are a resource that takes many years to restore and recover. Our project results will generate significant financial savings for Serbia and contribute to environmental protection and forest conservation through reduced use of chemical pesticides.

Prepared by PestFreeTree project team

Photograph: Team of scientists on the project PestFreeTree

PLANT A FLOWER, EMBELLISH THE WORLD

The Eco Explosion project is an inspiring story about a student company that was formed at the Mija Stanimirović Electrical Engineering School in Niš, where the idea of ecological transformation of the local community gradually developed. It all started with the competition of student companies launched by Junior Achievement Serbia, where a team of enthusiasts achieved great success and turned their love for ecology into a practical and sustainable project.

The student company, like any other, has its own people in management positions – Ognjen Marjanović is the company director, Petar Cvetković the finance director, Petra Mitrović the production director, Mihajlo Dinić the graphic designer and Jana Kostić the marketing director and our interlocutor, who explained to us what ecological bombs were and how they help to preserve the environment.

Eco Explosion produces eco-bombs – seedlings enriched with soil, humus, seeds of selected plants and special absorbent sand called the secret ingredient, as it plays a crucial role in preserving the readiness of seeds for germination. The sand actually helps the eco-bombs keep their shape and absorb all the moisture so that the seeds cannot germinate until they come into contact with water. The bomb-making process, which takes place in the school's Makers Lab, involves mixing ingredients and forming balls that are then dried for 24-48 hours, allowing the team to produce large quantities of their "invention" in a relatively short period.

Everyone will be able to buy eco-bombs on modified devices that will be placed all over Niš, while the team hopes that in the future, the devices will be distributed in other Serbian cities.

The devices are very easy to use and attract the attention and interest

Photographs: Ekoeksplozija team

of both children and adults. All that is required is 50 dinars to buy a token, which is inserted into the device after purchase. The user then pushes the lever several times and gets their eco-bomb ready for planting.

Although the purchasing process is simple, the students still encounter challenges along the way. Some of the challenges included the safety and operation of the machines that would be installed and distribute their product, as well as the formulation of the recipe for the innovative eco-bombs.

Financial challenges are also common with such initiatives. However, Eco Explosion managed to stand out thanks to the support of the local community, the media and especially the Vožd Karađorđe scouts, who recognized the value and potential of this project.

"Up until now, we have purchased all the ingredients and all the consumables ourselves with the money we would collect at school bazaars. Our school, other students, and teachers supported us by buying various decorations, sweets, and gifts that we sold at the school. In this way, we raised enough money to invest in the company and realize our idea. If we hadn't participated in the bazaar, we don't know how we would have managed to collect the money. We believe that finances are exactly what is stopping young people from implementing their ideas", Jana explains.

All that is required is 50 dinars to buy a token, which is inserted into the device after purchase. The user then pushes the lever several times and gets their eco-bomb ready for planting

Eco Explosion produces eco-bombs – seedlings enriched with soil, humus, seeds of selected plants and special absorbent sand called the secret ingredient, as it plays a crucial role in preserving the readiness of seeds for germination

Green areas and parks in cities are key reminders that we are part of something bigger and that our well-being is closely related to the health of our planet. Apart from always making space more beautiful and tamer, plants primarily filter the air.

Eco Explosion aims to spread environmental awareness, primarily among young people, hence its slogan, "Plant a Flower, Embellish the World."

Prepared by Milica Vučković

SUSTAINABLE DEVELOPMENT MUST BE MORE THAN JUST AN EMPTY PHRASE

Sustainable development is a phrase used today by all companies in their reports and an excellent backdrop for PR stories. However, sustainability is often used only as an empty phrase, and companies are not serious about dealing with it strategically and systematically. This can become a severe global problem because our planet and humanity's survival depend on concrete, sustainable business results.

As a concept, sustainability was first used extensively in the business context in the late 20th and early 21st century, when the harmful effects of industry on the environment and society became increasingly obvious. International standards ISO 14001 for environmental protection management and ISO 26000 for corporate social responsibility have become widely accepted. Sustainable development was first implemented in industries that had the greatest impact on the natural environment and society, such as energy, mining, agriculture, construction, textile, and automotive. They were the first to look for solutions to reduce negative environmental impacts. However, our interlocutor does not work in any of these heavy industries; rather, she is a banker. There are several reasons why we are talking to her, and all of us are required to engage.

> ProCredit Bank has had sustainable banking as its development focus for more than two decades

The path to sustainability is demanding – but there is no alternative

We spoke with Marina Mijić, Head of the Sustainable Development Department at ProCredit Bank, about the motives and ways the banking sector is involved in the global movement of sustainable business strategies. ProCredit Bank is considered a pioneer among financial institutions as it has approached sustainability with full understanding and responsibility and has set goals.

"ProCredit Bank has had sustainable banking as its development focus for over two decades. What does this mean in practice? It means that we have adapted all work processes to sustainable practices – from online banking and strictly controlled consumption of energy and all other resources in our daily work to measuring CO_2 emissions, financing sustainable and green projects, and

Photograph: ProCredit Bank

Marina Mijić
Head of the Sustainable Development Department at ProCredit Bank

implementing restrictive investment policies towards clients who have not set sustainable goals or started with the green transition. We are the first bank in Serbia to have the Sustainable Development Department. We have hired engineers, environmental specialists and economists who provide advisory and partner support to clients when they decide to change their business to green. Banks today are much more than just banks. We are not just finance providers, but we also give the direction in which the country's economy should move and shed light on various impacts such an economy will have on the environment and people", Ms Mijić says.

The bank has been recently validated by the international SBTi initiative, which testifies to the ambitious and strictly defined sustainability goals of the ProCredit banking group.

The bank has determined its short-term goals for reducing harmful emissions in line with the Paris Climate Agreement, and the ProCredit Group is approaching them decisively.

To compare, 500 large global companies did not pass this validation, which speaks volumes about the high standards that ProCredit sets for itself and its clients. Marina Mijić adds that this road is demanding and complex, but there is no alternative.

Humanity is the central figure of sustainability

Regarding sustainability, most people think of the Green Agenda and the measures companies implement to protect the environment. However, human beings are actually at the center of the concept of sustainability.

This statement is true in two respects. First, humans create and manage sustainable practices. The planet's survival depends exclusively on humanity's awareness and commitment to solving the problems of pollution, high gas emissions, and energy efficiency. Everything is in mankind's hands.

On the other hand, sustainable business implies taking care of people equally by providing healthy and stimulating working conditions, open and transparent communication with them, developing employee skills and know-how to fulfil their working potential and providing equal rights for everyone within the company.

Sustainability also implies taking care of people from the immediate and broader social community, especially social groups that require a specific approach to providing financial services.

The importance of mankind for the sustainable future of business and even the planet itself is evidenced by a very interesting point of view that Marina Mijić shared with us: "The world is obsessed with artificial intelligence and all that it can do instead of man. After the initial fascination, AI started to scare us. In such an atmosphere of AI dominance, companies are becoming increasingly focused on people, their feelings, motivation, and work/life balance, as well as creating stimulating programmes for their comprehensive development. The sustainability model is humane in its essence, which means that it seriously counts on people".

ProCredit Bank

Photograph: (bottom left) ProCredit Bank; (Mijić) courtesy of Marina Mijić

BANJA LUKA EXPO 2024 VISITED BY MORE THAN 15,000 PEOPLE

The first international trade fair, Banja Luka Expo 2024, held in early April, gathered representatives from the construction, metal and electrical industries, wood industry, technology, IT sector, electronics and robotics, real estate, architecture and design. Over the course of three days, the Fair was visited by over 15,000 people and brought together 300 exhibitors from 10 countries. Exhibitors had at their disposal more than 15,000 square meters of space in the student campus located at 1a, Voj-

Banja Luka Expo was an opportunity for business people from the entire region to exchange experiences, ideas, and visions. It was also a place to connect, cooperate, and form partnerships

Photographs: MT-KOMEX BH

voda Petar Bojović Boulevard, while the exhibition area for working and agricultural machines was outdoors, spanning 6,000 square meters.

Panel discussions and conferences were held during the fair, and more than 30 speakers from the business and economy participated. One of the topics was regional cooperation today and in the future. The theme that marked all days of the Fair was the development of solar power plant projects, their impact on the carbon footprint, and companies' energy independence.

"Exhibitors from the banking sector, microcredit organizations, insurance companies and other financial institutions from all over Bosnia and Herzegovina also took part", said Slaviša Kovačević, Chairman of the Fair's Managing Board.

Banja Luka Expo was an opportunity for business people from the entire region to exchange experiences, ideas, and visions. It was also a

> Panel discussions and conferences were held during the fair, and more than 30 speakers from the business and economy participated

place to connect, cooperate, and form partnerships. Representatives of numerous organizations, government ministries, agencies, and financial institutions attended the event.

Companies MT-KOMEX and MT-KOMEX BH both had a booth at the International Trade Fair, as leaders in the construction and design of solar power plants in Serbia and Bosnia and Herzegovina.

This large international fair event was organized by RS Consulting and Trade d.o.o. Banja Luka and Elite Fair d.o.o. Banja Luka, with the institutional support of the Government of the Republic of Srpska, the Ministry of External Trade and Economic Relations of Bosnia and Herzegovina, the External Trade Chamber of Bosnia and Herzegovina, the Chamber of Commerce of the Republic of Srpska and the Banja Luka government.

Prepared by Jasna Dragojević

UNITED HANDS MAKE THE PLANET GREENER

In March this year, the Little Cleaning Bears community celebrated its fourth birthday, but also marked the success of the campaign launched in September of last year – Throw the Cigarette Butt in the Bin

The strength and will that a person carries inside of them is most strongly manifested in the difficult moments that life brings. The first days of the coronavirus pandemic prompted us to change certain lifestyle habits. People experienced more free time differently. For Perica Štefan, the pandemic made it impossible for him to do his job, but at the same time, it made him realize that free time is his most valuable resource. During a walk in the forest with his little sister, he noticed that the hustle and bustle of everyday life prevented us from paying attention to the fact that nature was filled with rubbish. A day after the forest stroll, he invited his sister and cousin to join him, and together, they collected the scattered rubbish. The small village of Nova Kapela, not far from Slavonski Brod, was the location that was first cleaned during the pandemic, which ultimately continued to develop into broader campaigns not long after. Symbolically, on Earth Day, they shared clips from these cleaning campaigns with their Facebook friends and invited them to join them. After returning to Zagreb, Perica began to receive the support of only the people closest to him until the media picked up his story. Four years later, more than 1,700 people who participated in cleaning campaigns with him at least once now make up the Little Cleaning Bears community (Čisteći Medvjedići,

Photographs: Little Cleaning Bears

in Croatian language), of which Perica is the founder and president.

Although the group was initially met with apprehension, this did not stop them from continuing to do what they had been doing. On the contrary, it encouraged them to continue with even bigger confidence. Perica says that continuity proved to be the most important factor, which is why they have implemented more than 400 cleaning campaigns so far. They received tremendous support and logistical help from municipalities, cities, communal services, and others; without their help, it would not have been possible to transport and store the collected waste. Through time and as their story developed, the first sponsors and companies that wanted to cooperate with them began to emerge, which financially facilitated the purchase of the necessary equipment needed for the cleaning campaigns. Also, the group established cooperation with numerous organizations, schools, kindergartens, and bookstores, while new messages and ideas relating to future cleaning actions spring up daily.

MUTUAL SUPPORT

People can be informed of all Little Cleaning Bears' activities on their social media accounts and a new website and show their support that way, too. In turn, Little Cleaning Bears wholeheartedly supports anyone who wants to start a similar campaign through counselling, promotion, and logistics. The community also monitors campaigns in Serbia and invites people from our country to show mutual support.

More extensive cleaning campaigns are organized almost every weekend throughout Croatia. Still, it should be noted that numerous clean-ups have also been carried out in other countries, from Georgia to Cyprus, through Tunisia and Gibraltar, to Greece and Estonia. According to Perica, a particularly satisfying segment of these campaigns, which was the initial idea, is that people in different places gather almost spontaneously and on their own initiative, with children often joining in. Although it is a joy to see a large number of people responding, Perica says that the best campaigns are carried out by up to 20 people, where there is no need to coordinate much. Still, the campaign itself, in the end, turns into socializing and the opportunity to chat with everyone.

In addition to the cleaning campaigns they carry out, Little Cleaning Bears also focuses on educating children in kindergartens and schools, which have expressed a growing interest. However, everything still mainly rests on the enthusiasm shown by individual educators, Perica says, adding that such education should be systematically organized and not depend on inspired individuals to implement it.

Throw the cigarette butt in the bin – 100,000 cigarette butts

In March this year, the Little Cleaning Bears community celebrated its fourth birthday, but it also marked the success of the campaign launched in September of last year – Throw the Cigarette Butt in the Bin. Once the symbolic 100,000 cigarette butts were collected, they were used to make the inscription THROW THE CIGARETTE BUTT IN THE BIN, which was displayed in Ban Jelačić Square in Zagreb and attracted a lot of interest. Many Croatian media outlets covered this campaign. Only recently, Little Cleaning Bears received the Green Butterfly Award for this campaign, which was awarded by Resolution Earth, an environmental project launched by Večernji List newspaper. On the day of this event, another 15,000 cigarette butts were collected in an hour and a half along a one-kilometer stretch in downtown Zagreb. Up to date, Cleaning Bears have collected more than 135,000 cigarette butts. Part of the campaign was also carried out in Ljubljana, which is known as one of the cleanest capital cities in the world. On the occasion, 9,000 cigarette butts were collected in two hours, which indicates the seriousness of the situation in terms of this kind of pollution. The problem, as Perica adds, is the infrastructure that could be better, which is why Cleaning Bears distributed 500 pocket ashtrays during the campaign. However, the main reason is negligence or ignorance about the harmfulness of this waste when it ends up in nature.

The collected butts are transported to a warehouse where they will wait to be used for other purposes.

CAN PENALTIES SOLVE THE PROBLEM?

Although Little Cleaning Bears thinks penalties are not the best way to move forward, they would undoubtedly speed up raising more awareness. Laws do exist, but they are not harmonized and are poorly implemented in practice. Some research has shown that only five fines have been written in Zagreb so far. There is room for progress, and the Little Cleaning Bears community believes that progress will come because, although slowly, we are still moving forward as a society.

Prepared by Katarina Vuinac

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