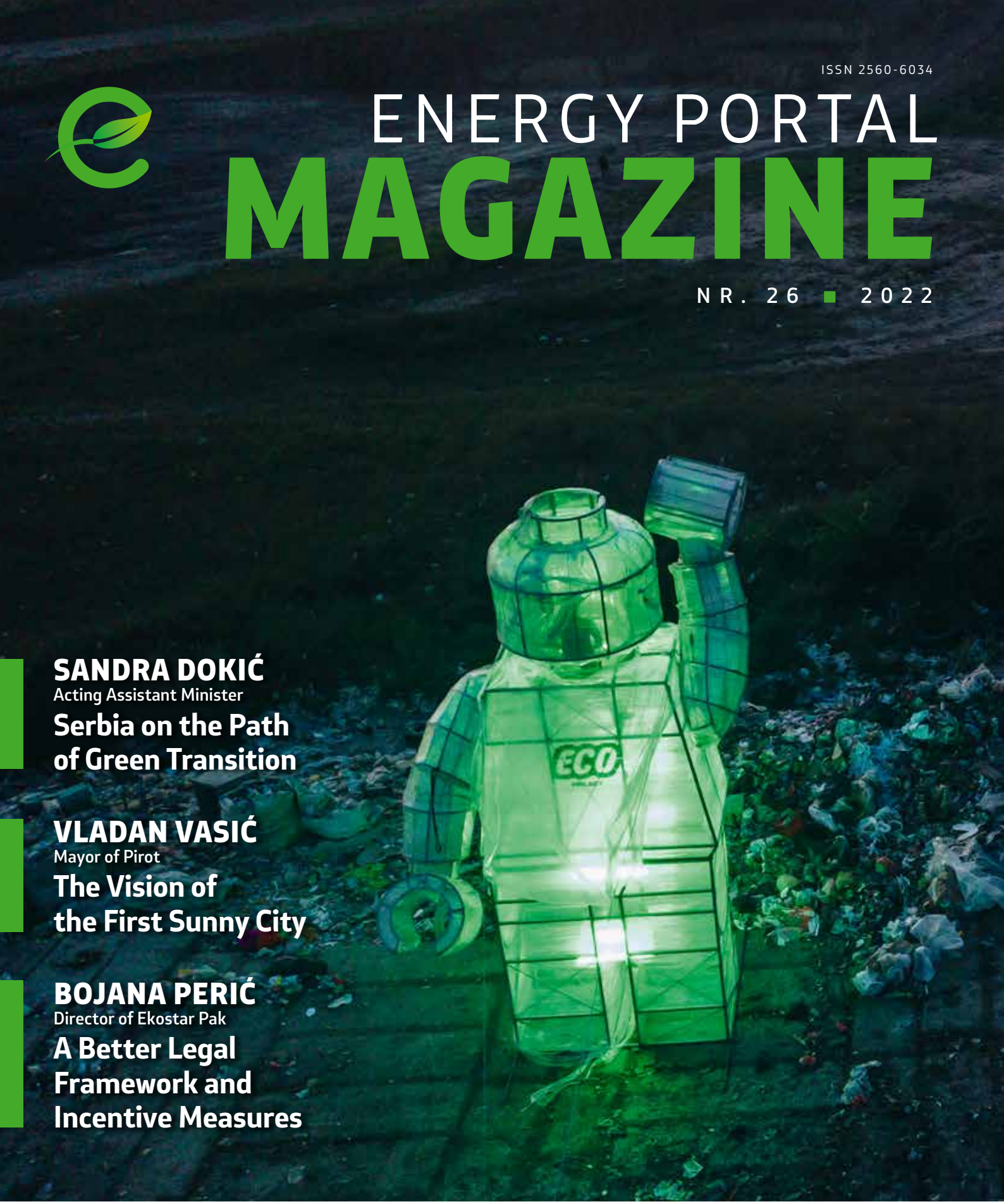
ISSN 2560-6034

ENERGY PORTAL MAGAZINE

NR. 26 ■ 2022



SANDRA DOKIĆ
Acting Assistant Minister
Serbia on the Path of Green Transition

VLADAN VASIĆ
Mayor of Pirot
The Vision of the First Sunny City

BOJANA PERIĆ
Director of Ekostar Pak
A Better Legal Framework and Incentive Measures

ABB
ProCredit Bank
Life Is On Schneider Electric
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Publisher:
CEEFOR Ltd, Belgrade

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Print:
Grafostil, Kragujevac

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

620.9

ENERGY portal magazine / editor-in-chief Nevena Djukić. - [Štampano izd.]. - 2017, no. 9- . - Belgrade : CEEFOR, 2017- (Kragujevac : Grafostil). - 30 cm
Tromesečno. - Preuzima numeraciju onlajn izdanja Energetski portal Srbije, gde je objavljeno 8 tematskih brojeva. - Drugo izdanje na drugom medijumu: Energy portal magazine (Online.) = ISSN 2560-6034. - Ima izdanje na drugom jeziku: Magazin Energetskog portala (Štampano izd.) = ISSN 2560-5232

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

COBISS.SR-ID 259518988

Dear readers,
Imagine that one cloudy afternoon around five, you unlock the door of your apartment, a cold and dark space is in front of you, and you press the buttons in a well-learned rhythm: click, click, click... Light in the hall, water heater, thermostat, light in the room, television... Respectively, without unnecessary movements, like a robot.

Forget about this scenario and imagine that, before you step into your smart home, everything is already switched on, and the afternoon can easily start in the pleasant and warm environment of your home.

If you like the idea of your home working for you and doing most of the routine things, pay attention to our articles on smart buildings, whether they are apartments (text The new housing culture comes into vogue) or completely modern buildings that are fully electric and digital (text Digitization is a key to sustainable, resilient, and hyper-efficient buildings). Regarding smart infrastructure, we provided a good insight into this concept in the text "Siemens – We create environments that care," where you will find a good example of this concept in the form of a realized project to modernize the medium voltage network in Serbia.

However, these objects are not the only smart ones. The topic of this issue on waste management gave us reason to believe that we have the brains to solve the accumulated problems in this area. In two conversations with Sandra Dokić, Assistant Minister for Environmental Protection and Stefan Simeunović, Director at Serbian Environmental Protection Agency, we learned that the Ministry of Environmental Protection had shown its determination to clean up the so-called historical waste completely (hazardous and non-hazardous) in Serbia created in the period after 2000 in bankrupt factories or factories in the process of privatization, as well as that the Ministry provided funds for the removal of 700 illegal landfills and the installation of video surveillance to preserve once cleaned locations.

The companies Bambi, ProCredit Bank, Delta Pak, and Ekostar Pak (operators of packaging waste management systems) also manage waste wisely, so we chose them as examples of good practice. And on the following pages, you can read what they are doing to reduce waste generation and save resources.

If you work in the civil sector, we suggest you read the grant application requirements because WWF is looking for creative project ideas for which it has earmarked 18,000 euros per project. Perhaps you are interested in the construction of a solar power plant and the possibility of producing electricity that you would deliver to the grid. Still, you are worried about the inadequate way of calculating VAT, excise taxes and other fees, so read our text "How to become a prosumer?"

To take a break with inspiring topics, "meet" people who resisted challenges and devised a solution for ragweed allergy (Innovative solution for a weed-free life) or new material, bacterial cellulose, which is actually a residue of the tea fermentation process (SKOBI – Inspiration in a cup of kombucha).

If you ignore our suggestions and start reading at the beginning and move toward the end, you won't waste time. I am sure you will learn something new and useful from each text.

Nevena Đukić,
Glavna urednica

6 **SANDRA DOKIĆ, Ministry of Environmental Protection**

Serbia on the Path of Green Transition

The Green Agenda for the Western Balkans and the European Green Deal are of great importance both for Serbia and the countries that are currently in front of "the gates" of the European Union and are moving towards fulfilling the goal of making Europe climate neutral by 2050. Republic of Serbia fully demonstrated its commitment to this segment by signing the Sofia Declaration and Brdo Declaration.

18 **VLADAN VASIĆ, Mayor of Pirot**

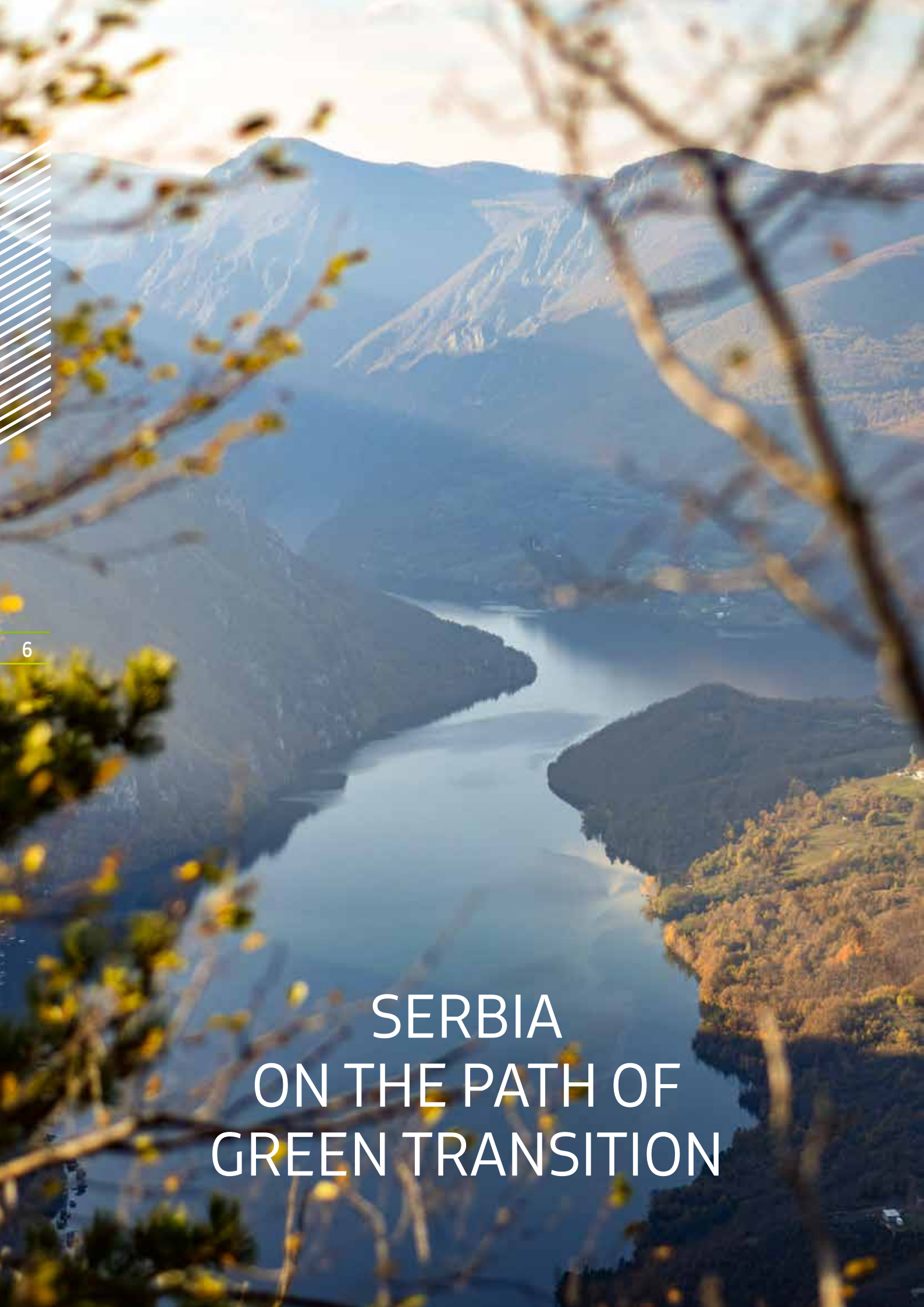
The Vision of the First Sunny City in Our Country

The city of Pirot has great potential for the production of energy from renewable sources. As the Major says, the goals are set and many activities have already been implemented that will pick up the pace even more in the coming period. The vision is to develop the maximum capacities for the use of solar energy sustainably and for the city of Pirot to bear the epithet of the first sunny city in our country.

IN THIS ISSUE

Photographs: (Dokić) courtesy of Sandra Dokić; (Vasić) courtesy of Vladan Vasić

Photographs: (Koprivica) courtesy of Tijana Koprivica; (Vuksanović) courtesy of Miloš Vuksanović



SERBIA ON THE PATH OF GREEN TRANSITION

The most important step for Serbia to become a European Union member is the transfer of the regulations of this political and economic community to the national legal system, and their subsequent adequate application at all levels. On this path, the adoption of environmental policies contained in Chapter 27, whose goal is better health of the population, preservation of natural resources, a competitive economy, a better quality of life, as well as the fight against climate change at the global level is one of the most demanding tasks. In addition to harmonizing legislation and passing numerous laws, we need to reach all standards that ensure successful environmental protection, an adequate fight against climate change, as well as efficient waste management and control of greenhouse gas emissions.

Although we are no longer at the very beginning, we still have a long transition road ahead of us. The Green Agenda for the Western Balkans and the European Green Deal are of great importance both for Serbia and the countries currently in front of "the gates" of the European Union and are moving towards fulfilling the goal of making Europe climate neutral by 2050. We spoke with Sandra Dokić, Assistant Minister for Environmental Protection, about the changes that await us regarding environmental protection, waste management and conservation of natural resources.

EP ***The negotiating position for Chapter 27 was adopted in January 2020. How is the accomplishment of set goals going?***

Sandra Dokić Considering that more than one-third of the EU's acquis communautaire relates to the environment, apart from the harmonization, fulfilling the set standards requires huge investments in the coming period, which, according to estimates for some environmental sectors such as water, waste and air, amount to around 12 billion euros. Because of all this, we can say with certainty that this is one of the accession chapters for which we will need a lot of time, commitment, and the active participation of the public and private sectors, as well as the citizens themselves, to reach the set standards.

For the sake of the complete transposition of EU directives into our legal system, we need to pass around 80 different regulations (laws and by-laws). Still, we must be aware that EU regulations are constantly changing too and that requirements and standards are being improved, so we are in the process of constant monitoring of changes and harmonization.

Since 2.9 million tonnes of municipal waste were generated in Serbia in 2020, of which only about 19 per cent was disposed of in sanitary landfills, and 15 per cent was recycled, it is clear that there is a lot of work ahead of us

SANDRA DOKIĆ is the Acting Assistant Minister in charge of international cooperation, projects and climate change. She has a Master's degree in Economics and is a law graduate. In the Ministry of Environmental Protection, she is in charge of Chapter 27, the Green Agenda for the Western Balkans, circular economy projects and other activities related to climate change. Ms Dokić is also a member of the TRATOLOW project team, the Environmental Working Group for the Western Balkans and the UNECE committee.

A topical segment, such as climate change, is a great challenge for us, and we have to fulfil a multitude of obligations that we face for the first time. In March of last year, the Republic of Serbia made a big step in this direction by adopting the Law on Climate Change, and we are currently working hard on preparing relevant by-laws.

The Law on Climate Change establishes certain obligations for the industry and energy sectors in the form of a system for monitoring, reporting and verifying (MRV) of greenhouse gas emissions (GHG) in industrial and energy facilities and the air transport sector. This means that we will have information on national GHG emissions at the sectoral level and in industrial and energy facilities, such as EPS, NIS, ironworks, cement plants, heating plants (above a certain capacity) and others. Plants above a certain capacity will have the obligation to submit an application for obtaining a greenhouse gas emissions permit and a monitoring plan, i.e. to calculate emissions (according to established methodologies), as well as to submit emission reports verified by an independent verification body recognized by the Accreditation Body of Serbia. Permits for GHG emissions, for all existing and new plants, will be issued by the Ministry. Establishing this system is a prerequisite for entering the EU Emissions Trading System.

We have demonstrated our commitment to this segment and our ambition to contribute to the reduction of global warming on a realistic basis by the fact that in August, the Government, following the Ministry's proposal, adopted the National Determined Contribution (NDC), which stipulates the reduction of GHG emissions by 33.3 per cent by 2030 in compared to 1990.

Photographs: (on the previous page) Pexels/Djole; (Dokić) courtesy of Sandra Dokić

EP ***With the help of UNDP, you also created a circular economy roadmap for Serbia. What does this document stipulate?***

Sandra Dokić The Ministry of Environmental Protection is the umbrella institution for defining the strategic circular economy framework, which is why in 2020, as part of the UNDP project "Circular Economy Platform for Sustainable Development in Serbia," it created the Circular Economy Roadmap for the Republic of Serbia. This is the first document of its kind in the region, and it was modelled after developed EU countries. The document provides guidelines for the development of a modern, resource- and energy-efficient circular economy in our country.

In 2020, an Ex-ante analysis of the effects of the circular economy was drafted. The analysis concluded that the circular economy, as a multi-sector topic, needs a separate public policy document to define the relevant strategic framework. Following this conclusion, a proposal for the Circular Economy Development Programme in the Republic of Serbia for the period from 2022 to 2024 with an Action Plan was prepared.

This public policy document has been submitted to public discussion, and we expect its adoption after the formation of the new government. The programme's overall goal is to create a stimulating environment for the development of the circular economy to support the green transition.

CONSTRUCTION OF SEWAGE AND WASTEWATER TREATMENT PLANTS

Together with the Public Investments Office, the Ministry of Environmental Protection is constructing wastewater treatment plants and sewage grids in 26 local self-government units.

The Ministry of Construction, Transport and Infrastructure is working on the Clean Serbia project, which stipulates the construction of over 5,000 kilometres of sewage grids and 165 wastewater treatment plants.

Construction of regional waste management centres

The Ministry of Environmental Protection is currently implementing a project aimed to establish regional waste management centres in Nova Varoš, Kalenić, Sombor, Užice, Pirot, and Sremska Mitrovica.

The Ministry of Construction, Transport and Infrastructure is implementing projects for the construction of regional waste management centres in Kragujevac, Kruševac, Vranje and Vršac, as well as the construction of waste management centres in Niš and Kraljevo and parts of the system in Pančevo.

Photograph: Unsplash/Valentina

The measures and activities defined through five special goals will secure support to the economic sector in the transformation to a circular business model and local governments in the creation of circular communities. At the same time, the waste management system and the use of green public procurements and voluntary instruments will be improved. There will also be special emphasis on raising the awareness of the interested public and educational institutions about the circular economy concept. All this will contribute to establishing the foundation for the transition to the circular economy.

EP ***You actively participated in implementing of the Circular Economy – Nordic Experiences project. How applicable are the experiences of developed countries in our circumstances?***

Sandra Dokić The goal of the Circular Economy – Nordic Experiences project, which was implemented by Finland, Sweden, Norway and Denmark, was to convey experiences and examples of good practice to the experts in Serbia by

> People must also understand that they have a role to play in improving the environment in their local communities

organizing a series of conferences in which experts from the Nordic participated. This was also an opportunity to highlight the benefits of the circular economy, as well as the challenges that these countries faced in the previous period. The circular economy is considered a great opportunity for a green transition, because the application of this concept saves resources, encourages innovation, reduces pollution, creates new jobs and increases competitiveness. Waste management was one of the areas that got the most attention at the mentioned conferences.

There is no universal way to transition to the circular economy, as each country has its own idiosyncrasies and needs to find its own model that will be efficient and sustainable. Nevertheless, it was good to hear from Scandinavian experts that achieving circularity at their level requires time, significant investments, great patience and commitment. The result is a healthier environment, and that waste can be turned into both a resource and money.

Despite the long transition process, it is encouraging to know that there are good practice examples in our country, too, both in the economic sector and local communities. These circular economy pioneers have recognized this concept as a way to save resources and energy, and at the same time, contribute to reducing their carbon footprint, which is a very positive effect from the perspective of climate change.

EP ***The Ministry has been investing a lot of great effort in rehabilitating unregulated landfills throughout Serbia. How far have you come with this project?***

Sandra Dokić There are about 3,500 unregulated landfills, and unfortunately, this decades-long problem cannot be solved overnight. Last and this year, the Ministry allocated significant funds for the rehabilitation of 750 unregulated landfills on the territory of local governments that responded to the Public Call and received funds for that purpose. It is extremely important that waste is no longer disposed of at the location of the cleared unregulated dump, which means that locals must behave more responsibly towards the environment. However, cleaning up unregulated dumps is not the only thing that needs to be worked on. To fully regulate this area and establish a waste management system at the EU level, we need to build the required infrastructure and acquire the necessary equipment, which will cost around 1.2 billion euros.

In Serbia, at the moment, a lot of work is being done on establishing a waste management system in over 80 local self-government units whose projects are in various stages of implementation – from planning to construction.

I also have to mention that, for the first time, our Ministry, with Minister Irena Vujović at its helm, has shown determination to completely clean up the so-called historical waste in Serbia (hazardous and non-hazardous) that was amassed in the period after the year 2000 in bankrupt factories or during the privatization process. This is the first time that such a campaign is being carried out to clean all the waste from all locations in a period of three years (2021 to 2023), which will cost 1.8 billion dinars. These activities are carried out in line with all prescribed standards under the supervision of our inspection. Considering the long period that has passed since the waste storage, a special kind of caution is required during these activities.

EP ***What can you tell us about the selective waste collection programme and resolving the problem of solid waste management?***

Photograph: Pixabay

Sandra Dokić I will follow up on the previous question because the separation and collection of separated waste is part of the waste management system. Solving the problem of municipal waste management in Serbia is a very complex endeavour. This year, the Ministry of Environmental Protection adopted the Waste Management Programme covering the period from 2022 to 2031, which follows EU policy in this area. The EU waste management policy aims to reduce the negative impact of waste on the environment and human health and to make greater use of waste as a resource. Since 2.9 million tonnes of municipal waste were generated in Serbia in 2020, of which only about 19 per cent was disposed of in sanitary landfills, and 15 per cent was recycled, it is clear that there is a lot of work ahead of us.

As one of the priority measures, the adopted Waste Management Programme envisages an increase in the recycling rate of waste generated by households to 25 per cent by 2025, 35 per cent by 2030, 50 per cent by 2039, and 65 per cent by 2054. These are extremely ambitious plans that, in addition to building the necessary infrastructure, include the use of primary waste separation in all households, the separation of green and other biodegradable waste, and the disposal of special waste streams in recycling centres. The Programme also foresees a regional waste management system that should be established in 26 regions. All this requires the implementation of new services in public utility companies throughout Serbia, which necessitates an increase in their capacity and a change in people's habits.

By establishing tariffs based on the pay-what-you-throw-away principle, people will be motivated to reduce mixed waste by separating recyclable waste from municipal waste into separate bins or containers. It is worth noting that some municipalities, independently or with the help of donors, are already implementing the service of primary separation and separate waste collection, which is really encouraging to know.

EP ***Could you tell us about the implementation of the wastewater treatment plant project in Serbia?***

Sandra Dokić Integrated management of water resources is the main policy in the water sector at both EU and UN levels. Under the auspices of Chapter 27, all directives related to water, including drinking water and wastewater, are integrated. The goal of the EU framework water directive to accomplish a good status of water resources. In Serbia, it will be implemented in four cycles, with a planned deadline for achieving all environmental goals being 2045.

The collection and purification of wastewater should ensure the protection of the aquatic environment from the harmful effects of wastewater, which is very demanding and requires the largest investments and a long-term approach. We need to build 359 wastewater treatment plants and about 11,000km of sewage grid to achieve that. Estimates show that this endevor requires investments of over 4 billion euros.

We are talking about very demanding infrastructural projects that involve drafting project&technical documentation, the resolution of property and legal issues, sometimes also the construction of access roads, changes to plans at the local level and the actual construction of the plant and the sewage grid, which is why it is estimated the Directive will have been fully implemented by 2045. After the plant's construction, it is extremely important to ensure sound management and sustainability in its business, which will be achieved by reforming the tariff system.

Knowing how much work is ahead of us, in the last year and a half, we have been working very hard on this segment, so that we can carry out activities regarding the construction of facilities and sewage grids (new or expansion of existing ones) in more than 120 local self-government units.

EP ***In cooperation with UNDP, you have been working on finding solutions to reduce greenhouse gas (GHG) emissions. What changes await us in the future on this front?***

Sandra Dokić The Ministry of Environmental Protection and the United Nations Development Program (UNDP) have been working together to implement several projects related to finding and supporting innovative solutions and business models that contribute to reducing greenhouse gas emissions and accomplishing the Nationally Determined Contribution (NDC). One such project is called "Local Development Resistant to Climate Change," which ended this year and which provided support to 11 innovative projects that contribute to increasing energy and heat efficiency

PRIMARY WASTE SEPARATION PROJECT

With the help of the EU and the Kingdom of Sweden, the Ministry of Environmental Protection currently realizes a primary waste separation project in four regions (Pančevo, Srem-Mačva, Duboko and Pirot), which includes 17 cities/municipalities.

The establishment of a system based on the two-bin model envisages the procurement of blue bins for households, i.e. containers for urban areas, which will separate recyclable dry waste (plastic, paper and cardboard, metal) from the rest of the waste. In contrast, the second bin will be used to dispose of mixed waste that remains after the separation of recyclables. Furthermore, a separate collection of glass in yellow containers is planned. The waste separated in this way is collected only by a specialized vehicle and taken to the separation lines, where it is further separated by category to give it a useful value.

and the share of renewable energy sources, as well as urban mobility, digitization of agriculture, better management of different waste streams and early warning of forest fires.

The implementation of these projects will contribute to the reduction of greenhouse gas emissions by half a million tonnes of carbon dioxide during the 20-year-long lifetime of the projects, which is equivalent to reforesting the area of 145 football stadiums. Also, 35 new green jobs were opened, while the projects positively impacted on the lives of 26,000 citizens and the environment in cities and municipalities throughout Serbia.

EP ***How far have we come with implementing the European Green Deal and the Green Agenda for the Western Balkans in Serbia?***

Sandra Dokić One of the Republic of Serbia's priorities in the coming period is the Green Agenda for the Western Balkans. The European Green Deal (adopted in 2019) is an EU strategic document that defines the future policy of the EU in the field of environmental protection in the face of climate change, to make Europe a climate-neutral continent by 2050, in which the use of non-renewable resources will not condition economic growth. To achieve the Green Deal goals, we need to act on the regional level, outside the member states, in terms of environmental protection and climate change. It is precisely the Green Agenda for the Western Balkans that highlights the inclusion of environmental goals from the European Green Deal in all activities of the Western Balkan economies.

By signing the Sofia Declaration on the Green Agenda for the Western Balkans (2020), and by signing the Brdo Declaration (in Slovenia), by which the region has adopted the Action Plan for the Green Agenda for the Western Balkans (2021), the Republic of Serbia fully demonstrated its commitment to this segment which is reflected in the following five pillars:

1. Climate action, including decarbonization, energy and mobility;
2. Circular economy, which deals specifically with waste, recycling, sustainable production and efficient use of resources;
3. Biodiversity, which aims to protect and restore the natural wealth of the region;
4. Combating air, water and soil pollution;
5. Sustainable food systems and rural areas.

Considering the comprehensiveness of the Green Agenda, it is clear that its implementation requires the coordination of a large number of ministries and institutions, which the Ministry is successfully doing through the established Working Group.

I would like to especially highlight the fact that, thanks to the energy and great commitment of Minister Irena Vujović to solving the accumulated environmental problems, her setting of clear priorities related to improving air quality, waste and wastewater management, as well as the entire Green Agenda for the Western Balkans, resulted in the adoption of important laws and strategic documents in a short period. Together with numerous concrete activities carried out in local self-governments, they will inevitably lead to a much better environmental image of Serbia.

Interviewed by: Milica Radičević

By establishing tariffs based on the pay-what-you-throw-away principle, people will be motivated to reduce mixed waste by separating recyclable waste from municipal waste into separate bins or containers

Photograph: Pexels/Nikola Igić

HOW TO BECOME A PROSUMER?

Although the production of electricity from renewable sources is a topic that has been present in the public discourse for years, the status of buyer-producer, better known to the public under the term prosumer, was accepted in Serbia only in 2021.

The Law on the Use of Renewable Energy Sources from 2021 prescribes that the prosumer produces electricity for his own needs and delivers the excess electricity produced to the transmission (distribution) system, i.e. a closed system in which the excess is stored and withdrawn at the moment when the prosumer cannot produce a sufficient amount of electricity for his needs.

With the adoption of the Decree on criteria, conditions, and manner of calculating receivables and liabilities between prosumers and suppliers, the procedure for becoming a prosumer is significantly simplified, and the entire process can be completed in less than a month. Before the adoption of the Decree, it took more than six months to complete this procedure.

After the end customer acquires the meter, he electronically sends a request to the company for electricity distribution to adjust the metering point to obtain the status of prosumer. Along with the completed application, he submits: the documents for adjusting the measuring point, proof of the paid fee, which currently amounts to 16,854 dinars*, and the manufacturer's statement on the compliance of the product with the requirements of the EPS. The mentioned documents are sent electronically to the address **kp.zahtev.bg@ods.rs**.

It is also necessary for the end customer to build a production facility, and the installed power of the production facility cannot be greater than the approved power of the

* for household and an object with a power of up to 10.8 kW

end customer's connection. The confirmation of the correctness of the device and installation is sent electronically to the address **kp.prikljucenje.bg@ods.rs.**

After this procedure, it is time to submit a request to the supplier at the electronic address **kp@eps.rs**.

If it is a household, a Request for the conclusion of a contract on complete supply with net metering is submitted, and if the end customer is not a household or a housing association, a Request for the conclusion of a contract on complete supply with net billing is submitted.

After the contract is concluded, the supplier informs the system operator, who then connects the end customer's facility to the power system within five days. In the next step, the operator registers the end customer in the Prosumer Registry within five days, officially acquiring the status of a prosumer.

The problem still exists

The dissatisfaction of existing prosumers is reflected in the inadequate way of calculating VAT, excise taxes and other fees. The Ministry of Finance considers that the basis for VAT, excise duties and additional fees should be the entire amount of electricity that the prosumer obtained from the supplier. In contrast, the Ministry of Mining and Energy considers that the fee should be a positive value of the net electricity difference, i.e. the difference between the amount of electricity delivered by the prosumer to the supplier and taken back.

PROSUMERS IN TIME OF CRISIS

Antrfile: Becoming a prosumer sounds tempting if we are environmentally conscious and aware of the current energy crisis that has hit almost the entire planet. Additionally, if we have noticed the information by following the media that we can save money with this way of producing electricity. In the end, when we find out that the procedure for becoming a prosumer is simplified compared to previous years, we ask ourselves – why shouldn't I? However, not everything is so easy. Existing prosumers express dissatisfaction due to the inconsistency of legal provisions, which casts a shadow over the benefits of electricity production in the capacity of prosumers.

According to official data, from the first solar panels that appeared on the roofs of houses in Serbia fifteen years ago, only about 11 megawatts of solar panels have been developed until 2022, while from the beginning of 2022 until now, 3.9 megawatts have been obtained, and even 37 megawatts are currently waiting to be connected. According to these data, by the end of this year, Serbia can have over 40 megawatts of new electricity from RES on the grid, which is a significant increase compared to the 11 megawatts obtained in the previous fifteen years.

Although the position of the Ministry of Mining and Energy is in accordance with the aforementioned Decree, the method of VAT calculation was applied according to the position of the Ministry of Finance, considering that the calculation of the VAT base is within its jurisdiction. Namely, the problem lies in the contradiction of the Decree with the Law on VAT, the Law on Excise and the Law on Public Contribution. The Ministry of Mining and Energy says that their Ministry has sent a letter to the Ministry of Finance to initiate changes in tax regulations and thereby reduce the tax base for prosumers. For the time being, we can hope that we won't have to wait long for a solution.

The Ministry of Mining and Energy says they will try to point out to the Ministry of Finance the importance of stimulating prosumers.

Accordingly, their Ministry has calculated that the electricity produced by prosumers for the country has 75 times the value compared to the cost of importing energy. The state imports electricity at an average price of 500 euros, but its market price sometimes amounts to 1,000 euros. According to their assessment, even if prosumers were not charged VAT at all, the state would benefit greatly from them.

The position of the Ministry of Mining and Energy is that it is important to continue stimulating prosumers to increase the trend of the growth in the number of consumers, which will also be a benefit for the state.

Prepared by: Katarina Vuinac

Photographs: Pexels/Kindel-media


SAŠVIM PRIRODNO
JOVAN MEMEDOVIĆ
EKOStar PAK
WARNING
THIS WASTE IS NOT A TOY!

A BETTER LEGAL FRAMEWORK AND INCENTIVE MEASURES ARE A CONDITION FOR THE DEVELOPMENT OF THE RECYCLING INDUSTRY

Bojana Perić,
Director of Ekostar Pak

Ekostar Pak is one of the leading packaging waste management systems operators in the Republic of Serbia. Since its foundation in 2010, this company has recycled around 640,000 tons of packaging waste. During the past year alone, it sent almost 80,000 tons of packaging for recycling. Through cooperation with more than 800 clients throughout Serbia, Ekostar Pak strives to be a reliable partner to the economy and fulfill its extended responsibility in recycling of packaging waste such as paper, plastic, glass, metal, and wood. These activities make it possible to reduce the amount of waste packaging that ends up in landfills since waste, with the adequate collection, becomes a resource for making a new product.

The director of Ekostar Pak, Bojana Perić, points out that the activities of the national operator imply that financial resources collected from the economy are invested in the collection and recycling of packaging waste to fulfill the prescribed obligations and achieve the set goals regarding the reuse and recycling of packaging placed on the market for a given year. Based on the latest report, more than 62 per cent of packaging was recycled in Serbia. More precisely 226,000 tons of packaging waste was used as a resource. Bojana says that her company advocates for the consistent implementation of primary selection, that is, the separation of waste at its place of origin, which is the first necessary step if we are talking about recycling.

"Only by properly separating the waste into certain fractions according to the future treatment can we get a raw material that can be used again. It is a misconception that everything recyclable can go in the same bin and that we will get a resource that we can use to make a future product. We should first separate the waste into containers such as buckets, containers, and bags, and then transport them separately to the line for secondary separation and preparation for future treatment," emphasizes Bojana.

One of the key roles in the establishment and functioning of primary selection belongs to local self-governments. That is why Ekostar Pak launched the ECOpractice campaign, through which it will present the results of a joint cooperation to all existing partners from public utility companies and invite other local governments to join the partnership. A few months ago, a NALED study was published on the improvement of the current primary selection system, where it was recommended that the recycling system should be available to all households, as well as

Photographs: (on the previous page) Soultime media/Jovan Memedović „Sasvim prirodno"; (all others) Ekostar Pak

that recyclable waste should be collected in two separate streams. This would imply a separate separation of paper and cardboard from other recyclable waste (plastic, metal, tetra pack and glass). A separate collection of wastepaper is particularly important because this raw material must not contain impurities or moisture. If the paper is damp or wet, the process of decomposition, rotting and swelling begin even during storage, making its further use impossible. Such paper can only be burned or taken to a landfill.

Today, the public can often hear different opinions on whether it is more important to introduce a primary selection or a deposit system (that is, the introduction of a deposit that is paid when purchasing beverages and which is returned if the packaging is returned).

"From our point of view, it should not be a dilemma because you cannot introduce a deposit without dealing with the primary selection," adds Perić. She points out that the deposit system should only be an upgrade of the "extended responsibility of the economy" when we want to achieve a result of more than 90 per cent recycling. "I would refer to the oldest deposit system in Germany, which was introduced as a mechanism to increase the number of reusable bottles, which ultimately did not happen. Even today in Germany, there is a public debate on this topic because its introduction reduced the use of reusable bottles even more and thus completely shifted the focus from waste prevention and reuse. The introduction of deposits has even led to legal proceedings before the European Court of Justice. This court has made it clear that the introduction of a deposit system for beverage packaging is only allowed if all manufacturers and retailers can really participate in the

> It is pointless to introduce a deposit system without introducing a primary selection

operational return system so that there is no disruption in the market," says Bojana Perić.

The export of raw materials has a big impact on our recycling industry, but also on the environment. Wastepaper and cardboard, as well as plastic packaging, make up more than half of the amount of imported waste. On the other hand, significant amounts of export waste are represented by wastepaper and cardboard, followed by glass and plastic packaging.

"When we look at these facts, we can conclude that there is certainly room for improving the legal framework and introducing new incentive measures in this area, which will help the domestic recycling industry," says Bojana Perić. She advocates that experts with expertise in the field of environmental protection and economy sit at the same table in making key decisions because the issue of environmental protection is very complex and cannot be viewed from only one angle. However, she also points out that she would like to meet more often with fellow environmental protection engineers because this educational profile exists in our school system.

"Since 2010, I have been intensively dealing with environmental protection, and I had the opportunity to see through my daily work how certain environmental protection decisions change a company's financial results. Now, as the director of one of the leading national system operators on our market, which operates within a group that has implemented a circular economy system, that experience is invaluable," says Perić.

Bojana Perić especially emphasizes the importance of involving the public when it comes to caring for the environment. This is precisely why Ekostar Pak tries to support activities that send such a message, and they are most proud of the projects that Andrej Josifoski – Pianist, architect and street artist, worked on, such as his famous installation called "This WASTE is not a TOY".

Prepared by: Milica Marković

THE VISION OF THE FIRST SUNNY CITY IN OUR COUNTRY

Pirot is a town in southeastern Serbia whose first historical records date back to the 3rd century and it was also once known as the Tures settlement during Ottoman rule. Pirot had to wait until 2016 to be given the formal status of a town. The town is known for its abundant cultural tradition and turbulent history. In the gourmand community, it became popular because of its flat sausage, which, together with its traditionally weaved carpets and cheese, represent Pirot's Holy Trinity of tastes, smells and colour, to quote the locals.

Although these are good reasons to present this particular city in this magazine issue, another good reason to feature this town in our magazine is the fact that Pirot made great strides in environmental protection and sustainable energy development in the last few years. We talked with Vladan Vasić, the long-term municipal president and the first mayor of Pirot, about ongoing projects, opportunities and plans for the future.

EP ***The primary selection of waste is in its infancy in Serbia, with Pirot being one of the first cities where households will separate waste. What can you tell us about this project?***

Vladan Vasić The primary waste selection project involves the sorting of municipal waste at the point of origin. The Pirot district is one of the four regions in Serbia that is included in the project which stipulates the procurement of bins, containers and auto-garbage trucks and is financed by the

VLADAN VASIĆ, the mayor of Pirot, is an electrical engineer by profession and has a Master's degree in economic sciences. He is the recipient of various awards and recognitions and began his career in the economy. Mr Vasić is very committed to his work and has a responsible attitude towards the city. As he says: "A satisfied citizen living in the same environment as me is the greatest validation of my efforts, knowledge and commitment to date." He is married and the father of three children.

IPA 2017 programme. The project envisages the distribution of 240-litre-blue-plastic-bins to all households in the city, to be used for the so-called dry fraction of waste which includes paper, cardboard, bags and PET packaging, the allocation of dry waste blue containers in residential blocks and yellow containers for depositing glass waste. The project is in the final implementation phase and so far, around 2,200 bins have been distributed in 63 streets. The allocation of containers in residential blocks will begin soon.

I would like to add that a hall with a secondary waste separation line was built at the regional landfill. In early August, the first quantities of separated primary waste were collected from households which previously had been given appropriate bins. The first results are encouraging, as a certain quantity of clean material has been collected which can fetch a good price on the secondary raw material market.

EP ***Air in Pirot was extremely polluted during the last heating season, and the media reported that the concentration of harmful particles was five times higher than allowed. What is the main source of air pollution in Pirot and how to eliminate its harmful effects?***

Vladan Vasić Since 2013, Pirot has been carrying out regular monitoring of SO_2, soot, NO_2, total sediments, lead, cadmium and zinc in air sediment. In the past three years, the data from the report show that the quantity of soot exceeded permitted values, especially in the winter months. On a monthly level, the values were excessive in the period between 5 and 10 days, and the causes of this are industrial plants that use coal and fuel oil, a substantial increase in the number of cars in the city, and people using solid heating fuel.

An automatic air quality measurement station became operational in August 2021, which registers data in real-time that is monitored on the State Network for Automatic Monitoring of Air Quality website and it measures the concentration of PM10 and PM2.5 particles and SO2. People can see these measurements on their mobile phones and computers.

> The city invested significant funds in the construction of a new power plant that no longer uses fuel oil but compressed gas as an energy source. At the same time, all the boiler rooms in the apartment blocks were shut down

The city invested significant funds in the construction of a new power plant that no longer uses fuel oil but compressed gas as an energy source. At the same time, all the boiler rooms in the apartment blocks were shut down. In cooperation with the Ministry of Energy and the Ministry

Photographs: Mayor's office

of Environmental Protection, we carried out tenders for the procurement of biomass stoves for individual households. We also implemented a project that financed the installation of biomass boilers in four schools and one kindergarten that were not connected to the district heating system. The coal-fired boiler room in the town centre, which was located on the premises of the vocational high school and the Pedagogical Academy, was shut down.

EP ***Renewable energy sources are one of the prerequisites for clean air, and given the line Ministry's incentives, the new Renewable Energy Sources Law, and the increasing prices of fossil fuels, now is the right time for investments. Which type of RES has the greatest potential in Pirot?***

Vladan Vasić Thanks to its natural characteristics, the city of Pirot has great potential for the production of energy from renewable sources. Solar and biomass energy are areas that stand out for their potential and available opportunities. The city of Pirot has significant experience and implemented projects using biomass, such as the first PPP project in Serbia (heating in four schools). In recent years, projects have been launched to build several large-capacity solar power plants, both by domestic and foreign investors, with an installed capacity of around 100MW.

Also, last year, the City of Pirot decided to procure and instal solar power plants that would work in the buyer-seller mode for certain facilities under the City's authority. As a result, several design and construction projects are currently ongoing – a 27kW-power-plant on the premises of public enterprise Komunalac, a 150kW-power-plant at the secondary separation facility of PUK Regional Landfill and a 150-kW-power-plant at the pumping station facility of public enterprise Vodovod i Kanalizacija. Also, 15 kW and 5 kW power plants were installed on the roofs of the Economic and Technical School. Under the auspices of the Public Competition, launched by the Ministry of Mining and Energy, the plan is to co-finance citizens to install solar power plants in buyer-seller mode with a total power of about 90kW.

The potential is great, we have set goals and many activities have been implemented that will pick up the pace even more in the coming period. Our vision is to develop the maximum capacities for the use of solar energy sustainably and for the city of Pirot to bear the epithet of the first sunny city in our country.

EP ***The Energy Efficiency Fund was also established. What has been done so far in Pirot in that respect and what are your plans?***

Vladan Vasić The City of Pirot was one of the first local governments to form its Energy Efficiency Fund. The motive behind this is to co-finance energy efficiency measures which would benefit citizens, i.e. natural persons. Funds come from the city budget but also other sources such as donations or the Republic of Serbia's budget.

In the past five years, activities were carried out that included co-financing of up to 50% of the value of projects, such as the drafting of energy efficiency studies for 14 residential buildings, the drafting of project documentation for energy rehabilitation for 16 residential buildings, the installation of heat energy consumption metres on the internal heating installation for 7 groups of customers/end users of district heating system, and works on thermal insulation of the fronts on 7 residential buildings. The total amount of allocated funds is about 38 million dinars.

Also, in 2021 and cooperation with the Ministry of Mining and Energy, the City of Pirot's Energy Efficiency Fund, launched a public competition after which we gave out grants to citizens to be used for energy rehabilitation of family houses in Pirot. As part of this competition, around 9 million dinars have been allocated for co-financing of energy rehabilitation measures. The subsidy budget for the 2022 competition will be 30 million dinars.

EP ***So far, 3.3 million euros have been invested in the construction of the wastewater treatment plant and the reconstruction of the water supply network. In May, another 16.2 million euros were allocated for the construction of the central wastewater treatment plant and the reconstruction and expansion of the sewage network in Pirot. How is the work progressing on all of these projects?***

Vladan Vasić In terms of the quality of drinking water, Pirot is No 1 in Serbia. In recent years, a lot of work was done

In cooperation with the Elektropionir Energy Cooperative from Belgrade, the City of Pirot has implemented the first crowdfunding project in Serbia in the segment of solar energy called Solarna Stara. The project objective was to install two 5kW-solar-power-plants, on the roofs of buildings owned by the City and located in the two old mountain villages of Temska and Dojkinci. The generated income will be donated to the local community.

on reducing water losses in the water supply network and its overhaul and expansion, replacing asbestos pipes, building a new drinking water purification plant in Berilovac, which supplies half of the city from the Krupac source, and the construction of a new water line stretching from Krupac to the Berilovac plant.

As for the new modern sewerage and water infrastructure in the city, a conceptual solution has been drafted and the issuing of site conditions for the construction of a wastewater treatment plant and the continuation of the construction of the existing city collector are all ongoing. At the end of this phase, we are going to launch a tender for the design and execution of the relevant works.

Once the plant is built, all wastewater will be purified and then discharged into the Nišava River. In this way, the quality of the Nišava River water, as well as the plant and animal life in the river, will be significantly improved, given the fact that currently that the collected wastewater is discharged into the river without previous treatment.

Once the plant is built, all wastewater will be purified and then discharged into the Nišava River. In this way, the quality of the Nišava River water, as well as the plant and animal life in the river, will be significantly improved

EP ***This year, the line ministry allocated 1.2 million dinars for afforestation in Pirot, which now has 200 more linden trees. Do you have plans for similar afforestation and landscaping projects in public areas?***

Vladan Vasić Every year, the City of Pirot invests significant funds in the city landscaping, both from its own funds and through various projects. In addition to the afforestation project for which we received funds from the Ministry of Environmental Protection, I would also like to mention the project of formation of a protective green belt on public green areas between the Tigar Tires factory complex and the E-80 highway to reduce environmental pollution and improve air quality. Two projects, stipulating planting a row of trees near the City Heating Plant of Pirot and the planting of sycamore trees and landscaping of the yard around the Pirot Historical Archive are envisaged. In the last few years, about 6,000 saplings were planted in the city and its surroundings as a part of this campaign.

EP ***Pirot has abundant flora and fauna. More than half of all bird species in Serbia live here. Do you have special measures for the protection of birds and other animals and what can significantly jeopardize their existence?***

Vladan Vasić The city of Pirot and Stara Planina (The Old Mountain) have exceptional biodiversity. Biodiversity enables all living things, including the human population, to adapt to changes and efficiently use available resources.

The surroundings of Pirot, and especially Stara Planina, are unique because they have diverse conditions that favour the emergence, development and existence of flora and fauna. Nature also adapted to the construction of the Compensation Pool in Pirot, so certain animal species recognized this place as their habitat. An oasis has been created for numerous species of birds, both rare and endangered, as well as birds from all over the world that are on the migratory route in spring and autumn, as well as for fish and plant life. It is very interesting to note that three humpback swans, large white geese, and different types of ducks were seen here at some time during the year.

When the water level is high, the pool itself and the nature that surrounds it exude a scenic beauty that attracts a large number of walkers, bird and nature lovers. It should be noted that we have fixed up the site around the Compensation Pool itself, which is used by a large number of Pirot's residents. In the future, this can be an excellent recreational area.

Interviewed by: Milica Marković

BAMBI'S STRONG AND STRATEGIC COMMITMENT TO SUSTAINABLE SOLUTIONS

Nataša Jovanović,
Environmental Specialist

After Bambi became a member of the Coca-Cola HBC family in 2019, the company's ambitions in the area of business sustainability have increased significantly. A synergy with a company with an international reputation has resulted in a new experience in observing topics related to environmental protection and an even more subtle approach to solutions. To approach sustainability strategically, Bambi produced a document – Sustainability Mission by 2030, defining specific goals in this area, and set up an inter-sector team with the primary task of supporting the implementation of green solutions and working on responsible treatment of natural resources.

In July 2020, Bambi switched completely to using renewable energy sources, with two-thirds of the fleet replaced by vehicles using liquid petroleum gas. Substantial efforts have been focused on reducing water consumption, with an impressive 55 per cent saved in 2010-2021.

Joining the World Without Waste initiative, Bambi has also defined reaching zero waste by 2025 as a goal. A set of activities has been initiated towards with goal through infrastructure investments and constant employee education about waste management.

In 2022, following the company's plans to increase the production capacity, Bambi realized a project of constructing a recycling yard covering 500m^2 and enabling temporary packing of all types of waste generated at the plant premises. Although construction materials prices rose suddenly and almost doubled, with the investment exceeding the projected budget significantly, the company was determined the importance of building such a facility.

Photograps: Bambi

When designing the facility, materials with a function of improving its energy features were selected, and the recycling yard can accept up to 30 different types of waste.

"Our new recycling yard also enables better control regarding further recycling or treatment resulting in obtaining energy," says Nataša Jovanović, Environmental Specialist, adding that benefits of the recycling yard are confirmed not only by the fact that different types of categories of waste are managed but also that the company gets an energy efficient space, standardized concerning safety at work as well, all in their of environmental protection.

Furthermore, the company strives to complete the cycle of waste use by improving collaboration with waste operators and working additionally on packaging waste management.

"In collaboration with Sekopak, we are planning a range of activities for 2023, contributing not only to the improvement of the primary waste selection but also to the education about proper waste disposal and recycling as the most beneficial way of turning waste into new good and prevent unnecessary waste accumulation. We believe that our example will also inspire our fellow citizens, especially the youngest ones, to add even more responsibility towards the planet and themselves to their daily habits," notes Nataša Jovanović.

Out of the total volume of waste generated at the plant premises, 98 per cent is already treated sustainably from the environmental aspect. Great results and planned initiatives confirm that Bambi truly perceives the local community as its home and that it will work on its greener and more sustainable future through specific activities.

In 2022, following the company's plans to increase the production capacity, Bambi realized a project of constructing a recycling yard covering 500m^2 and enabling temporary packing of all types of waste generated at the plant premises

Out of the total volume of waste generated at the plant premises, 98 per cent is already treated sustainably from the environmental aspect

STRONGER DETERMINATION AND POLITICAL WILL TO CHANGE THE ATTITUDE TOWARDS RESOURCES

What should Serbia do to reduce environmental pollution, preserve biodiversity and adequately respond to the challenges of climate change? Will the legal framework be realigned with the Green Agenda? We looked for answers to these questions in a conversation with Radovan Nikčević, who has been dealing with energy and sustainable development topics in the Western Balkan countries for more than two decades and was recently appointed manager of the Green Agenda project in Serbia which is implemented under the UNDP's auspices.

EP ***You were involved in the preparation of the Sofia Declaration by which the Western Balkan countries undertook to work together with the EU towards achieving climate neutrality in Europe by 2050. Is there any progress made?***

Radovan Nikčević Seen as a whole, the region still has room to change its attitude towards the environment at full capacity and to start fulfilling the obligations it undertook when signing the Green Agenda Declaration in Sofia in November 2020.

There are certain initiatives and projects in place, but the relevant processes must be expedited, and for these co-

Photograph: Accelity Royalty-free images

untries to be more efficient and effective. There is often a lack of determination and solutions at the regional level. To a large extent, there is also a lack of political will to change the paradigm of our treatment of resources, economic activities and the environment in general.

Perhaps we can look for reasons in the pandemic and war conflicts that significantly shook the global economy and disrupted priorities, but we should also look into the lack of regional support. This should certainly not be an excuse for the absence of a more decisive reaction and the creation of a long-term vision with a clear goal. That goal is primarily climate neutrality, but also changing how we perform economic activities, travel, commute to work and meet our daily needs.

The Sofia Declaration is a complex and demanding document, and fulfilling its obligations will require extremely large investments and financial strains. In fact, it is best to say that every dinar invested in future development will actually be a dinar for the green transition. Also, when we invest in the future, we will have to take into account and ensure the principle of investment sustainability. All in all, neither the environmental picture nor the perspectives regarding that topic have changed significantly over the past two years.

EP ***An action plan was adopted last year, which stipulates measures and obligations for all countries in the region so they can align with the European Green Plan. How consistent are the regional countries in fulfilling these obligations?***

Radovan Nikčević The preparation of the action plan itself was a long-term and demanding process that included, first of all, governments from the region, but also various international organizations active in the segments covered by the Green Agenda, and to a certain extent, civil society. Of course, all of this was done with great support and close cooperation with the European Commission. The region is not alone in this whole system, as there is a network of organizations that provide support to the entire process of a comprehensive transformation of society.

RADOVAN NIKČEVIĆ was born in Priština in 1974 and has been engaged in energy and sustainable development issues in the Western Balkan countries for almost two and a half decades. In addition to Serbia, he spent a long time in Montenegro, Austria and Bosnia and Herzegovina where he worked for various international organizations such as GIZ, the Energy Community and the Regional Cooperation Council (RCC) and on various projects in the aforementioned areas. For the last three years of his professional career, he has been focusing on activities related to the European Green Plan and the Green Agenda for the Western Balkans. During that process, he coordinated the drafting of the Sofia Declaration and directly worked on preparing the Green Agenda Action Plan. Since September, he has been working for the UNDP in Belgrade as the manager of the Green Agenda project in Serbia.

Of course, this process and dynamics largely depend on the readiness of countries to implement reforms through the development of a strategic and legal framework, but also through applying concrete measures. This is precisely where there is ample room to expedite the transition and act more decisively in terms of fulfilling the obligations stipulated in the Action Plan. However, what transpired was that experiences can be exchanged through regional approaches and cooperation, but concrete problems cannot be solved. Therefore, we must turn to ourselves and see what each of us can do.

A NEW GREEN FRAMEWORK FOR THE FUTURE

Two more global events await us this year, which will define the strategic orientation for the next several decades, namely:

- **COP27 or the 27th Conference of the Parties of the UNFCCC (UN convention on climate change), which will take place in early November in Sharm el-Sheikh, Egypt**
- **CBD COP15, i.e. the 15th Conference of the Parties of the UN Convention on Biological Diversity, which will have two parts – the first will be held in Kunming (China) in mid-October, and the second in Montreal (Canada), in mid-December.**

Photographs: (Nikčević) courtesy of Radovan Nikčević; (right) Pexels/Dominika Roseclay

IS THERE A COUNTRY THAT IS A REGIONAL LEADER?

"If I try to be objective and look at the region as impartially as possible, I have to say that Serbia was the first to start drafting the National Action Plan (following the initiative of the Ministry of Environmental Protection, a Working Group was formed out of the representatives a number of relevant institutions, although this was not an obligation). On the other hand, and with the help of numerous partners, Serbia received substantial assistance implementing concrete measures to accelerate the green transition. I am, first and foremost, referring to the EU for the Green Agenda in Serbia project, which is mostly financed by the EU and implemented by the United Nations Development Program (UNDP). The project already has a significant budget to initiate positive changes. The Swiss Government has recently provided additional funding; partners such as the Kingdom of Sweden, the EIB and others gave their contribution and important support, too."

EP ***You have recently stated that the regional countries must harmonize the environmental and legal frameworks with the Green Plan. What can you tell us about Serbia's efforts in this direction and whether the energy crisis has affected the alignment with the Green Plan?***

Radovan Nikčević Harmonizing strategic and legal frameworks is not only an obligation under the Green Agenda but also part of the accession process. The European Green Plan confirmed this and stipulated another set of both strategic goals and regulations that must be transposed into the national legal framework.

In previous years, Serbia passed a large number of laws relating to environmental protection and about 200 by-laws. However, with new, increased climate ambitions (Fit for 55), and a set of regulations in other sectors such as energy, transport and agriculture, it will be necessary to update and further harmonize the legal framework. This is a continuous process. The Environmental Protection Strategy – Green Agenda, which is expected to be completed in September 2023, should provide clear guidelines for the further development of both the strategic and legal framework.

On top of the activities on creating an appropriate environment for the green transition, the fact remains that the economic sector, local self-governments and even individuals are interested in the implementation of concrete measures and innovative solutions that contribute to decarbonization, stimulate circular business models or have other positive effects on the environment.

Finally, as far as the crisis and its impact on the acceleration of the alignment with the Green Plan are concerned, the effects are still not visible. A period of uncertainty is ahead of us during which we are going to realize where we stand and whether there are renewable alternatives to natural gas, on which a large part of European industry rests, or whether, as it is already happening in Europe, we will have to reach for long-forgotten coal reserves, which, of course, can have unfathomable consequences from an environmental point of view.

EP ***The national consultations brought together numerous representatives of institutions, civil society, the private sector and the academic community. How have they been cooperating in solving environmental problems?***

Radovan Nikčević The national consultations have demonstrated there is room for improvement in this area. The willingness and desire are there, but the cooperation between sectors and different subjects has to improve

A period of uncertainty is ahead of us during which we are going to realize where we stand and whether there are renewable alternatives to natural gas, on which a large part of European industry rests

Photograph: Unsplash/Adrian Infernus

with the view of connecting everything into one functional system, using this great knowledge and channelling ideas in the right way. I hope that this will be realized during drafting the Environmental Protection Strategy – Green Agenda, which the UNDP team will be working on. I have become a member of this team recently, together with the Ministry of Environmental Protection, and we are going to work together for a year.

In previous years, Serbia passed a large number of laws relating to environmental protection and about 200 by-laws

Photograph: Pexels/Mathias Reding

EP ***The goal of the Stockholm+50 global conference was to mobilize global and local environmental action for our planet and our future. What are the main conclusions from the conference?***

Radovan Nikčević The conference assembled a large number of delegations from all over the world, with a clear message that only united can we meet the challenges and ensure prosperity for all. As far as the results are concerned, I would like to single out the conclusions, that is, "Recommendations and Actions for Renewal and Trust". As the most important elements of that document, I would like to underline the need for urgent action and actions at the national level. Special attention was given to the promotion of the UN Resolution, which recognizes a clean, healthy and sustainable environment as another basic human right.

Interviewed by: Milica Marković

THE STOCKHOLM+50 INITIATIVE

"I would single out as particularly important the recommendations that have stemmed from this initiative on the necessity of improving cooperation, both between different sectors (energy, transport, agriculture...) and between different levels (national, local, NGO sector, economy). There is also urgency in boosting the capacity to develop an adequate (strategic and legal) framework, but even more importantly, build the capacity to implement regulations, knowledge and skills of relevant actors, which often represents a weak link in the chain of activities on improving the environment. The report also indicated the necessity of transforming the economic sector, abandoning the linear production process (take-make-use-discard), moving onto circular business principles and adapting to the announced Carbon Border Adjustment Mechanism (CBAM)."

THERE IS NO ALTERNATIVE TO RENEWABLE ENERGY

According to some estimates, the usage of RES (renewable energy sources) will cover 70–80 per cent of all humanity's energy needs by 2050. Although the most important purpose of using RES is to replace non-renewable sources of energy whose quantity is limited, it is not the only goal. A healthier environment, a stable supply of electricity, as well as the economic progress along with the creation of new job positions, are also important benefits that we can expect from the application of RES.

Despite the current geopolitical situation and the challenges brought by the pandemic, projects that contribute to a greater representation of renewable energy sources continue. We spoke with Eric Scott, the founder and president of Akuo, an independent energy producer, about how his company sees the further development of the green energy market, what is the potential for the Balkans and our country, and why the process of energy transition should be accelerated in our region.

EP ***Tell us something about your entry into the world of renewable energy sources. What did it look like at the beginning, and where are you now?***

Eric Scotto We are pioneers in renewable energy sources because we started back in 2003, and at that time, we were building wind farms in France, Turkey, and Poland. At that time, the market was very small, in France, the potential of wind power plants was less than 12 MW, and already in 2004, we built the largest wind farm with a power of 57 MW. Two years later, we realized that it was important to diversify the technology because we didn't want to be a company dealing only with wind energy but renewable energy in general. We started developing solar projects, even biomass projects, and then we started doing business in more countries. Today we have 20 offices worldwide and mainly focus on wind energy, solar energy, and electricity storage.

EP ***You said that you do business in several countries – does this also apply to the Balkan countries? What is the potential of Serbia and the region regarding renewable energy sources?***

Eric Scotto The Balkans are very important to us primarily because this part of Europe still relies heavily on fossil fuels. Another reason is that the Balkans are rich in natural resources. We knew that the Balkans would have to turn to renewable sources at some point, and we are here to support this transition. In the Balkans, we started projects in Croatia, where we built a 42 MW wind farm, and the development of some solar projects is underway. We should also mention Montenegro, where we built a wind farm that is still reputed to be one of the largest in the region. Although we shouldn't compete on who will build the biggest wind farm, it is very important to show how RES projects in the Balkans are progressing. As for Serbia, we are developing several wind projects with the capacity of 85 MW and 80 MW, and their construction is planned for next year. We are also developing solar power plant projects in North Macedonia and a project in Kosovo. The Balkans certainly have great potential in the production of green energy – one summer day this year brought us the largest production from wind power plants in Montenegro in the entire Balkans.

EP ***In addition to constructing classic wind and solar power plants, what else is included in your portfolio?***

Eric Scotto I have already mentioned our experience in electricity storage projects, which I believe can be of great importance for the Balkan countries in the energy transition process. We are also developing agro-solar projects that combine food production and solar energy so that agriculture and solar projects will no longer compete for land. In addition, the projects of floating solar power plants built on hydropower reservoirs are very interesting because they can use the existing network, while on the other hand they contribute to saving water.

Eric Scotto,
the founder and president of Akuo

EP ***How do you see the role of RES in the process of combating climate change?***

Eric Scotto Renewable energy is no longer alternative energy as it was once thought. The need for green energy and energy stability has been further emphasized by the current geopolitical situation and the Covid-19 pandemic, indicating that we must accelerate the energy transition. We can no longer ignore climate change; we have seen what kind of summer is behind us, and I believe that governments all over the world have an obligation to their citizens to invest in RES projects.

Prepared by: Nevena Đukić

> The Balkans are strategically important for the development of RES projects because it still relies heavily on fossil fuels, and on the other hand, they are rich in natural resources.

Photographs: (background) Pexels/Kindel media; (Scotto) courtesy of Eric Scotto

A NEW SMART HOME CULTURE OF LIVING IS BECOMING THE FASHION

If we could pick just one word to mark the technological progress of the 21st century, a safe choice would be the adjective smart. We wear smartwatches, use smartphones, and watch programs on smart TVs. Even objects such as chairs, lamps and glasses have become "smart" in modern society. It would seem that the general use of this designation has somewhat ruined the initial idea, so today, we can rightly question its true meaning.

In the world of technology, we would call a device "smart" if it has some form of "intelligence", i.e. if it can "think" in a way. The same goes for smart homes that provide more than just remote control of appliances. These intelligent systems provide comfort and security at all times.

The path to comfortable and safe living

The concept of smart homes is well known in the West, while only a small number of people in Serbia are familiar

Photographs: ABB

with the advantages of this new way of living. As explained by our interlocutor Vladimir Šijačić, Director of the Pametan stan company and ABB's distributor and system integrator, smart buildings "think" following predetermined rules set by the system installer or the users themselves. Therefore, this is not about artificial intelligence making autonomous decisions. You can relax; smart houses will not take over control of your lives.

A smart building, whether a house, apartment or business space, is designed to make life easier for its user and more cost-effective. Automated control of electrical installations, such as lighting, blinds, motorised shades, heating and cooling, and control over household devices, will ensure their optimum use and provide us with easy living without the need to think about too many details. Furthermore, all appliances in smart buildings are properly turned off, thereby increasing the safety of living. This knowledge ensures we can sleep tight.

Whether at work or at home, our day often consists of routine tasks that do not vary much daily. Going to work at a certain time means locking the house, adjusting the heating or cooling temperature and turning the alarm system on. All these actions can be automated to save time and ensure they have been done.

Šijačić explains that for each of these situations, we can have a "scenario" that will initiate many actions on the electrical installations and devices in the home and thus quickly align the environment with our needs.

"If, for example, you want to watch a movie, you can play the 'watching a movie' scenario that will automatically darken the room, turn on the TV, offer you a list of movies and perform other actions to provide you with an ideal environment for watching a movie", explains Šijačić, adding that the same is true for other scenarios, such as "going to sleep", "travelling", etc.

The point of smart home systems is to group a number of actions, so we do not need to walk from switch to switch, pressing them, or to avoid having a dozen remote controls on our table, which is certainly not the most practical solution.

Saving every kilowatt

The increase in fuel and electricity prices during the past few months has made us check increasingly often whether we have turned off all lights and household appliances not actively in use. With smart homes, we do not need to worry about this anymore. In fact, we can be certain the appliances have been on only when electricity use was lowest.

Let us say that during the heating season we turn the heating on at four in the morning, as the electricity is the cheapest then, but nobody really likes the idea of getting up from their warm bed so early. Smart homes have a solution for this. The heating will be programmed to turn on at the crack of dawn, providing us with comfort and maximum savings.

According to Vladimir Šijačić, energy savings are highest in heating and cooling buildings and lowest in lighting, as the market is dominated by LED lights that do not use a lot of power. However, regarding exterior lighting, we need not worry about the time for turning the lights on, as a smart home is equipped with a timer that precisely "knows" when the sun sets and when additional light is needed.

Taking everything into consideration, we should be aware that a smart home can save up to 40 per cent of heating and electrical power, notes Šijačić.

How to get a smart system in your building?

If you like the idea of your home working for you and performing most of the routine tasks, it would be good to know when and how you can install it.

Our interlocutor explains that users have wired and smart wireless systems at their disposal, whereas wired systems involve setting additional installations during construction. Therefore, it is best to think about smart systems during the initial phase of construction and in collaboration with the architects, as wired systems provide greater communication stability and security compared to wireless systems.

Nearly all smart systems distributed by our interlocutor's company are made by the manufacturer ABB. This company is known for its ideal solution for communication with other devices.

"The communication between the ABB-free@home smart system and other devices is achieved based on a 'cloud to cloud' system. ABB practically has its own cloud containing information about your system, while appliances such as the washing machine in your home have their own cloud containing relevant information. Connections are made at the 'cloud to cloud' level, with paramount importance given to communication security against external intruders and continuous improvement of communication", says Šijačić.

A smart home in line with your lifestyle

ABB has produced myriad technological solutions that dominate global markets. One of them is the ABB-free@home system, which is becoming increasingly popular in our region.

ABB-free@home relies on the KNX system, with over 30 years of tradition. The ABB-free@home system is completely open to all manufacturers, meaning we can have many appliances by different manufacturers in our home and they will successfully communicate among themselves.

Dejan Dešić, Sales Manager for ABB's buildings, transport and infrastructure segment, notes that this system offers users capabilities they do not have in the KNX system, as they no longer need a programmer.

"The user no longer needs a system integrator to program their equipment, one who needs to enter the user's apartment to change the software every time the user wants to change anything to make things function differently. With the ABB-free@home system, the user has avoided the cost of hiring a programmer. Now they are the ones doing this whenever they wish, adapting the system to their own habits. Another advantage of this system is that the equipment of a manufacturer such as ABB is considerably more economical in price than equipment for the KNX system", says Dešić.

He says the first smart building in Serbia was built in Belgrade, on Terazije, followed by a number of commercial buildings, such as the flight control building in Surčin and luxury villas, while recently, there is increasing consideration given to *smart home* systems in mass-housing construction.

Recently, investors from Novi Dorćol have recognised the advantages provided by smart home systems and opted for ABB as a reliable manufacturer present across all continents.

A total of 4,300 *smart home* devices were delivered to the building in Novi Dorćol for 225 apartments with a surface area of 16,800 square metres. A total of 950 scenarios were created, and six meteorological stations were set up on the building, informing users of the weather and warning them of hazardous situations.

All indications show that the time of smart buildings is yet to come in our region, with many projects under preparation to save energy and provide maximum comfort to satisfied users. When the price of fuel and electricity is reaching a historical maximum, smart homes stand out, along with renewable energy sources and other energy efficiency measures, as an efficient solution to help us overcome the energy crisis.

Prepared by: MIlena Maglovski

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ENERGY AND ECOLOGY **BELGRADE FAIR, OCTOBER 4–6, 2022**

ENERGY STABILITY AND ENVIRONMENTAL AWARENESS

This year's **17th International Energy Fair and 18th International Fair of Environmental and Natural Resources Protection "EcoFair"** are organized in conditions of extremely complicated, turbulent and unpredictable energy situations on a global scale. Global disruptions are also reflected at the regional level in almost all sectors – production and distribution of gas, oil, coal, electricity... In practice, this inevitably opens up a huge number of energy and ecological chances and opportunities. The first challenge to respond to these, and also to other current issues, will be organized **from October 4 to 6, 2022**, in Hall 1 of the Belgrade Fair.

The Belgrade **Energy Fair** enjoys the reputation of the largest annual regional gathering of companies, institutions and professionals from all sectors, phases and effects of generation and distribution of electricity, coal, oil and gas, renewable energy sources, energy efficiency and mining. With their specific features, renewable energy sources are in special focus. In the international energy context, the focus is also on business and market character of the fair.

Photographs: Belgrade fair

The ecology fair "Ecofair" gathers institutions, equipment manufacturers, distributors, recyclers, operators, landfill operators, local government bodies, utility companies, waste generators, professional public – all various factors from the environmental protection system. The main subject of interest of this event includes the recycling industry, waste management, communal technologies, nature protection and protection of natural resources from pollution, financing and management in the sector of environmental protection and waste management, wastewater treatment and management, industrial safety.

THE POWER OF NATURE

October 04 - 06

ENERGETIKA

ufi Approved International Event

ECO AIR

Under the auspices of
Republic of Serbia
MINISTRY OF MINING AND ENERGY

Under the auspices of
Republic of Serbia
MINISTRY OF ENVIRONMENTAL PROTECTION

85 BELGRADE FAIR

WORKS HAVE BEGUN ON THE LARGEST BIFACIAL POWER PLANT IN SERBIA

The construction of the "DeLasol" solar power plant, the largest bifacial solar power plant on the ground so far, will soon begin in Serbia. This solar power plant will be privately owned. The construction was entrusted to MT-KOMEX, a leader in the design and construction of solar power plants in our country

The "DeLasol" power plant will cover an area of 12 hectares. Apart from its size, this solar power plant will also be the largest in terms of power. It will produce 15,000 megawatt-hours of electricity annually

It is known that Serbia's goals are to get 40 per cent of its energy from renewable sources by 2040. Although we could make faster progress in this area, we should acknowledge examples of good practice and all projects that are successfully implemented and bring positive changes. Among them will soon be the "DeLasol" power plant, which will cover an area of 12 hectares. It will be connected to the 110/35 kV substation in Lapovo.

Apart from its size, this solar power plant will also be the largest in terms of power. It will produce 15,000 megawatt-hours of electricity annually. Its size is also reflected in the number of solar panels – as many as 17,980 state-of-the-art panels, power 650/655Wp, manufactured by the renowned Canadian Solar. The company MT-KOMEX takes care of its credibility, so this time again, it will rely on long-term suppliers.

To make the best possible use of the sun's energy, bifacial solar panels are prepared for the construction of the "DeLasol" power plant, which produce electricity more efficiently than monofacial panels. Bifacial panels can yield electricity from both sides of the panel, which is why they produce a larger amount of electricity. Solar panels will be

placed on a specially made structure that allows greater absorption of reflected radiation.

Thanks to the municipal administration of Lapovo, which recognized the value and importance of the project, a construction permit was obtained, as well as the conditions for design and connection by Elektrodistribucija Srbije. This was preceded by the adoption of the urban planning project and the obtaining of location conditions. In accordance with the regulations, an impact assessment study was prepared, and it was concluded that "DeLasol" would not have any negative impact on the environment.

After obtaining the construction permit, the works were registered, and the clearing of vegetation and the preparation of the land for the construction of the solar power plant began. In support of the commitment shown by the company MT-KOMEX, it should be mentioned that the entire amount of solar panels, with a total power of 11.7 MWp,

was delivered to the location. Installation of the structural system is planned in October, followed by further activities on assembly and installation work by the company's professional team. According to the plan, the power plant should be commissioned on March 1, 2023.

The construction of the solar power plant "DeLasol" is not the only project in 2022 that MT-KOMEX can boast of. In July, a contract for the construction of another bifacial solar power plant was signed between Toyo Tires deputy general manager Kenichiro Takasaga and MT-KOMEX director Miloš Kostić. The Toyo Tire Taiyo solar power plant, with a total power of 8.4 MWp, will provide Toyo Tires with 10 to 15 per cent of its annual electricity needs, and it is expected to be put into operation by the end of this year.

The company MT-KOMEX has so far built and delivered equipment for a large number of solar power plants on the ground and roofs, with a total installed power of 60 MW.

Prepared by: Katarina Vuinac

MT-KOMEX D.O.O.
ENERGY&CHARGING SOLUTIONS

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Photographs: MT-Komex

COMPLETELY ECOLOGICAL

The fact is that more and more companies in our country see the positive effect of environmentally responsible business. The progress made is evident not only in Serbia but also in the region. The strategic determination of these companies is reflected not only in applying the principles of circular economy and recycling but also in the active promotion of the idea, and sharing of knowledge and experiences from this field. We asked Tijana Koprivica, Chief Business Sustainability Officer at Delta Holding, one of the leading companies in Serbia and the region, what the sustainable operation of a large system like Delta entails.

EP ***Delta-Pak, in charge of waste management, also operates among the members of Delta Holding, one of our country's most important business entities. What does the business of an authorized operator in our market entail?***

Tijana Koprivica Delta-Pak provides the services of an operator for the management of packaging waste, advisors in the environment, chemicals, and transportation of dangerous goods. It performs these tasks for members of Delta Holding but also external clients. The organization operates according to the principles of social responsibility and sustainable development, which it shares with its clients and business partners.

EP ***How significant is it that Delta Holding has an in-house operator? What is it most reflected in?***

Tijana Koprivica The members of Delta Holding, as well as all other companies that import or produce packaging and place it on the market, must meet national goals regarding the management of packaging and packaging waste. Delta

> Delta is a large system that operates in various businesses, and we recognized the capacity and economic benefit of managing waste independently

Photograph: Pexels/Nataliya Vaitkevich

is a large system that operates in various businesses, and we recognized the capacity and economic benefit of managing waste independently. The availability of professional staff influenced the decision to offer this service and environmental consulting to other companies. For years, Delta-Pak has been a leader in fulfilling national goals for its clients.

EP ***Delta-Pak also actively participates in projects related to raising awareness about protecting the natural environment. Which projects would you single out as the most significant?***

Tijana Koprivica In the previous period, Delta-Pak implemented numerous projects aimed at supporting the community in improving the field of environmental protection and raising environmental awareness. Some of them are a project to assess the amount and morphological composition of packaging waste in city markets, catering establishments and shopping centers, and to educate volunteers about its proper selection and storage; education of agricultural producers on the proper disposal of packaging waste from plant protection products; establishment of an information system on marketed packaging and packaging waste. Our clients show a great interest in improving their business in the field of environmental protection, and we will continue to influence the awareness of others, primarily small and medium-sized enterprises, as well as the citizens of Serbia through socially responsible activities. Through internal communication, we continuously educate our employees about how they can contribute to environmental protection through the Eco Corner on the internal portal and all other interested parties through social networks on profiles called Completely Ecological. Follow us, and you will get many useful tips and explanations regarding environmental challenges.

TIJANA KOPRIVICA graduated from the Faculty of Economics, University of Belgrade, and has been working in Delta Holding since 2006. She is in charge of defining and implementing the Company's sustainable development strategy. She introduced annual reporting on non-financial operations according to the internationally recognized methodology of the Global Reporting Initiative. She is responsible for organizing and engaging employees in CSR activities.

EP ***Delta's plan to use 60 per cent of energy from renewable sources by 2030 is well known. How do you plan to achieve this goal?***

Photographs: (bottom) Delta Holding; (Koprivica) courtesy of Tijana Koprivica

GREEN BUILDING

The new office building has LEED Gold certification, and recycled materials such as UNIDOM plastic balls were used for its construction, which reduced the use of concrete and thus CO2 emissions. The facade is made of the most modern materials, and the most modern ventilation is installed with optimal energy consumption and ionizers so that the air is of excellent quality. Two mini solar power plants and a rainwater tank used for technical water are installed on the roof. A waste management system has also been established in Delta House.

The Sava Center project is aligned with the latest EU taxonomy criteria, which imply compliance with all European requirements related to environmental protection. For example, in addition to solar panels, the Sava center will receive a completely new, energy-efficient façade and ventilation, heating and cooling systems. As with Delta House, the most modern, environmentally friendly materials will be used in the renovation process.

Tijana Koprivica We mainly provide electricity from conventional sources, but our goal is to use at least 60 per cent of energy from renewable sources by 2030. Solar power plants have already been installed at seven locations, so four of our factories, two cold storages and the Napredak farm will replace 30 per cent of electricity from conventional sources with solar energy. In addition to solar panels, in 2021, the capacity of the biomass boiler at the Seme Sombor factory, which uses corn husks in the corn drying process, was expanded. There are also smaller biomass boilers for heating buildings on the estate Jedinstvo in Apatin and Napredak in Stara Pazova. The project for the solar power plant at the Sava Center is being developed, and other locations for solar and a biomass boiler will be considered.

EP ***How much care for the natural environment is developed in the business world where the focus is mostly on making a profit?***

Tijana Koprivica Since its foundation, Delta Holding has introduced innovations to our market and set high business standards. The application of the latest technical and technological achievements is also reflected in improving all aspects of sustainability. In addition to economic, our business strategies also include social and environmental development goals. Ecological development goals have a positive effect on the environment but also on business results. First of all, by applying energy efficiency measures, costs are reduced due to a reduction in energy consumption. By switching to alternative energy sources, independence from external suppliers is achieved, and the effects of price turbulence are minimized. In addition, emissions of harmful gases are reduced, and thus the risk of paying penalties for excessive emissions. Apart from energy efficiency, it is also important to properly manage water and other resources, which also leads to savings. The same is the case with proper waste management. Many by-products can be used in production processes as energy or raw materials. All of the above is in favor of the fact that the application of ecological principles has positive effects on the environment and business results.

Interviewed by: Milica Marković

Photograph: Delta Holding


Once there were barren lands.
We're creating
new future
new businesses
new workplaces
better world
new ideas
new value
new hope
By working both smart and hard, as if by magic, people have created a better world for themselves, for their community, for the present and future generations.
It is knowledge and effort that we have lived by and developed our vision for more than 30 years.
DELTA HOLDING
Creating Business
deltaholding.rs

MORE WORKERS, MORE RECYCLED HAZARDOUS WASTE, A HEALTHIER ENVIRONMENT

Although waste constitutes the final stage of the life cycle of an object, the goal of a different approach to the conventional production model is to transform that end into a new beginning. Recycling is an excellent way to use a discarded or used item, but how do you give a new purpose to waste that can be hazardous to the environment? And what is classified as hazardous waste?

Since 2010, when a system of incentives for reuse and recovery of waste was established, our recycling industry has disposed of one million and one hundred thousand tons of waste

The origin, composition or concentration of dangerous substances that can cause danger to the environment and human health determine the categorization of an object as hazardous waste. Products that become special waste streams after use include tires, batteries and accumulators, electronic and electrical products, mineral and synthetic oils, vehicles, and medicines.

Special waste streams are controlled separately by regulations. They do not represent municipal waste, and it is forbidden to dispose of them in landfills. They must be treated with adequate technology following the law to prevent mercury, lead, cadmium, barium, and other elements from being released into the ground, water, or air. Even the recycling process itself carries a high risk to the environment.

Since 2010, when a system of incentives for reuse and recovery of waste was established, our recycling industry has disposed of one million and one hundred thousand tons of waste. During the last year, 120,000 tons of special waste streams were collected, and according to the data for this year, this trend continues.

"Waste tires were recycled the most – more than 470,000 tons. The public somewhat neglects tires compared to some other types of waste. Still, they are easily flammable, so in landfills where they often end up and where

there are frequent fires, it can happen that due to inadequate disposal, in case of combustion, numerous gases are released into the atmosphere harmful substances and poisonous gases, such as dioxins and furans, which are believed to be among the most toxic compounds ever made by man. After this explanation, it becomes much clearer why tires are potentially very dangerous. After tires, the largest amounts of electrical and electronic waste were disposed of 350,000 tons, 220,000 tons of batteries and 55,000 tons of waste oil," explains Marko Vučenović, Secretary General of the Recyclers Association of Serbia.

Collection of hazardous waste

When we talk about special waste streams, the collection of hazardous waste from economic entities is clearly regulated, both in terms of their obligations and the possibilities and rights of collectors and operators. However, the problem arises when this type of waste comes from households. There is no regulation or infrastructure whatsoever.

"Local self-governments do not have a developed system for collecting special streams of waste, most often, they do it sporadically, and that is by organizing an action to collect this type of waste from citizens once or several times a year. It would be extremely important for local governments to establish centers for collecting special waste streams, which they are legally obliged to do. It is especially important for small household appliances that citizens could easily bring to dedicated centers so that these appliances would not end up in containers. For large devices, citizens often cannot provide transport, and one of the solutions can be for public utility companies and authorized operators to organize collection from citizens", says Vučenović.

Marko Vučenović,
General Secretary of the Recyclers Association of Serbia

PROGRESS OF THE RECYCLING INDUSTRY

The waste management program in the Republic of Serbia until 2031, which was recently adopted, and the accompanying Action Plan, envisages the construction of recycling yards in all local self-government units.

In addition to local self-governments, the collection system should also include traders of special waste streams, primarily electrical and electronic equipment, and tires.

The recycling industry in Serbia is at a turning point. The turn of state policy and public interest in environmental protection, including waste management, inspire hope.

Photographs: Recyclers Association of Serbia

Treatment of special waste streams

The first recycling facilities were opened about two decades ago, and the real momentum of the recycling industry came in 2010, with the establishment of a system of incentives for the reuse and utilization of waste.

"The system is designed in such a way that there are fees for special waste streams paid by end users through producers and importers, and this money is specifically used to co-finance the treatment of special waste streams. Therefore, we have the polluter pays principle. This provides funds for the safe disposal of hazardous materials at operators abroad who are paid for the disposal service. This system has suffered several blows, and it has been functioning with difficulties for almost a decade, given that the impact fee was abolished, with the insufficient allocation of funds and delays in payments", Marko Vučenović points out.

The previous year represents a turning point in the state's relationship with the recycling industry. A big step forward was made because, for the first time, after ten years of unpredictability, incentives were paid at the end of each quarter. That approach was continued in the current year. So far, tender procedures for two quarters have been completed.

With its utmost efforts, the recycling industry managed to withstand the period of uncertainty, stabilize the processed quantities, and preserve and increase the number of jobs. Today, around 15,000 people are employed in this branch. Thanks to the responsible policy of the Ministry of Environmental Protection and the Government of the Republic of Serbia, after several years the number of employees at the operator has increased by nine per cent.

Prepared by Milica Radičević

ProCredit Bank

HIGH ENVIRONMENTAL PROTECTION STANDARDS

Modern society has resulted in prosperity evident at every turn. We have the privilege today to drive electronic vehicles, we complete tasks at the simple click of a button, and robots are doing certain types of jobs alongside the human workforce. That's not all, technique and technology are progressing at alarming rates and it's anyone's guess what the future will bring. As we continue to ruthlessly consume natural resources, mountains of paper, plastic, organic and hazardous waste is the by-product.

Luckily, self-aware individuals and responsible companies are doing their best to personally contribute to changing the way they approach available resources, as it is clear that things have to change. The first steps are the hardest, and many environmental frontliners, despite their huge desire for change, are unsure when it comes to choosing which environmental protection activities are most effective.

We have to admit that it is easier for large organizations to take the best course of action toward achieving environmental goals. Companies and banks, with large numbers of staff, clear rules, standardization and support tools can more easily achieve defined environmental protection and sustainable development goals and fulfil all energy efficiency measures.

ProCredit Bank is a pioneer in the implementation of the EMS (Environmental Management System) in our country. This is a system of strategies created to manage and continually improve the bank's and its related parties' impact on the environment. For over ten years now, ProCredit Bank has implemented this set of carefully designed steps to monitor and maintain environmental protection.

ProCredit Bank is the first bank in Serbia to have obtained the ISO 14001:2015 Certificate, which confirms that the bank applies a sustainable Environmental Management System and fulfils all the requirements of the ISO 14001 Standard.

The ProCredit approach to environmental protection

01	02	03
Management of Environmental and Social Risks in Lending	Internal Environmental Management System	Green Financing

ProCredit Bank has taken a step further in implementing good practices concerning environmental protection and waste management. Procedures have been introduced in line with EU regulations. Waste is sent for recycling several times per year, and a clear Waste Management Plan has been implemented.

Photographs: (background) Unsplash /Micheile Dot Com; (all others) ProCredit Bank

In practical terms, this means that in its internal environmental management, the bank monitors the consumption of electricity, water, fuel, paper use, waste generation and its treatment, and CO_2 emissions.

Thanks to these records, the bank knows its exact carbon footprint. However, that's not all. This stored data also calls upon and obliges us to find new ways to reduce consumption and generate additional savings. The long-term experience and improvements in the implementation of the EMS system, as well as the achieved results, indicate that we have taken a big step forward.

PLASTIC FREE JULY

During the global Plastic Free July campaign, ProCredit Bank implemented activities whereby all its clients, associates and employees were invited to refrain from using single-use plastics during the entire month of July. With the desire to work together to improve environmental habits, the bank's habits and the habits of all others, it proposed we use only cloth bags/sacks, to buy food in bakeries that packages its products in paper only and to avoid using plastic cups and cutlery.

ProCredit says "we alone have to find and offer solutions to pollution"!

No paper and plastic waste

By digitalizing operations, ProCredit Bank has reduced its carbon footprint by introducing the centralization of employees and electronic channels used to make payments, open accounts and provide many other services.

Another huge step was taken in 2018, when the bank took the decision to eliminate the use of single-use plastic in its premises. The bank's on-site kitchens are equipped with all the necessary multiple-use dishes for employees (plates, cutlery, glasses, cups) while plastic cups near water dispensers in branches have been replaced with biodegradable cups.

All banks operating within the ProCredit Group have adopted their own Internal versions of the document entitled „Guide – Reducing plastic in offices". This document lists plastic objects most often used at work and provides sustainable alternatives. When procuring office supplies, and during every second procurement, care is taken in terms of the companies supplies are ordered from and the materials from which ordered supplies are made. Wherever there is room to implement sustainable solutions, the bank will choose the environmentally conscious supplier even if the cost of procurement is not the optimal choice.

ProCredit Bank manages electronic and hazardous waste in line with the Law on Waste Management. Waste is sent for recycling several times per year, and a clear Waste Management Plan has been implemented.

Green energy

It seems that renewable sources of energy are perhaps the greatest environmental feature of ProCredit Bank's business. They have made an intensive effort to provide an example of good practices through various parallel efforts: special attention is dedicated to saving energy, in all that they, do the bank strives to be 'green' oriented and are working intensively on expanding their fleet of electronic vehicles (EVs).

The bank has installed a solar power plant on the roof of its head office, and in 2018, ProCredit Bank became the first key consumer of 'green' electricity obtained from the EPS.

They have stopped using diesel vehicles, have procured and promote the use of EVs and plug-in hybrids, resulting in a cumulative effect, where mitigating the negative impact of fossil fuel use is in question. The bank has announced that it will achieve the following, clearly defined goal – a fleet of vehicles with zero CO_2 emissions by 2022. In order to achieve this, and to further promote electric mobility, in 2021 and 2022 the bank installed 40 e-chargers across the country.

By providing regular training and seminars, employees have the opportunity to be reminded of how they can best contribute to protecting the environment. And, it doesn't stop there. The bank is very happy to provide clients and other companies with the recommended steps to becoming environmentally friendly, to receive certificates and actively start working towards creating a healthier environment.

Prepared by: Milica Radičević

SIEMENS – CREATING AN ENVIRONMENT THAT CARES

It has long been known that energy moves the world. In a literal sense, electricity and its sources move societies or threaten them when the energy flow is reduced. The competitiveness and prosperity of society are directly correlated with a stable and sustainable supply of electricity, and today we are increasingly talking about the role of energy in the process of decarbonization and the fight against climate change.

It is not easy to respond to the growing demand for electricity at a time when there is a global energy crisis and, at the same time to continuously reduce the emissions of greenhouse gases originating from the energy sector. For us to achieve this, this sector must be modernized and harmonized with all the achievements of modern society.

It is precisely the goal of the company Siemens Belgrade – to create a favorable environment for the smooth development of the energy sector that can respond to all emerging challenges.

Srdan Srdanović, Head of the Siemens Smart Infrastructure department, answered questions related to the development of energy infrastructure, the digitalization of the energy sector, and the challenges brought by the times we live in.

EP ***The Siemens department that you manage is called Smart infrastructure. What does Smart Infrastructure actually mean?***

Srdan Srdanović I believe there is some resistance to terms like "smart" because of their widespread use. That's why we need to explain that thanks to smart infrastructure, which includes energy systems, meters and buildings, our cities will become better places to live in and greener. Smart infrastructure can reduce carbon emissions and energy demand and optimize energy supply. Demonstrating the purpose behind every "smart" idea, this infrastructure will be successful if consumers and companies stand behind the idea of digital energy transmission.

EP ***What does your motto We create an environment that cares really mean?***

Srdan Srdanović Smart infrastructure supports what industries and organizations strive for; to be efficient, responsible, and smarter. Our company offers a wide portfolio of network control and automation, distribution of low-voltage and medium-voltage electricity, its redirection and

Photographs: Siemens

control, and energy solutions. The portfolio is balanced in terms of all products, systems, solutions, and the entire range of services. Technology and human ingenuity unite and form a whole with our environment. If we want to take care of the world, the world must develop a new way of thinking about infrastructure. This means that it should reflect the needs and attitudes of modern society. In this sense, smart infrastructure supports how we all want to live – happily, comfortably, sustainably and in harmony.

EP ***Where in Serbia has the smart infrastructure already been implemented?***

Srdan Srdanović We work with customers and partners in Serbia to create an ecosystem that intuitively responds to people's needs and helps them achieve their goals. In the current health crisis, supporting the Clinical Center of Serbia, an institution that provides specialized health services for residents of the entire country, makes us especially proud. With the n-1 security principle implemented, the power supply is safe and reliable for our customers and patients. Smart infrastructure enables safe operation and tracking with real-time monitoring of every aspect of the energy supply process and enables efficient operation of the Clinical Center of Serbia.

One of the projects is certainly the project of modernizing the medium voltage network in Serbia. Increasing the system's reliability and ensuring that most customers are supplied with electricity in less than 30 seconds in the event of an outage in the city center was a big challenge for us. We delivered complete equipment for 30 substations and thereby enabled easy configuration and expansion of the system, but also reduced payments in terms of planned fines and provision of safe power supply to critical customers (hospitals, water supply, public transport, sensitive industrial production, public communication systems, etc.).

I would also add the flue gas desulfurization system for Thermal Power Plant Nikola Tesla A in Serbia. This factory was built in the 1970s, and today, it has to adapt to EU standards, especially concerning environmental protection. The new desulfurization system in the four blocks of TENT, A3, A4, A5 and A6 – with a capacity of 350 MW each, will enable this coal-fired power plant to operate for at least another 20 years following EU legal regulations.

Srdan Srdanović,
Head of the Siemens Smart Infrastructure departmentF

> Technology and human ingenuity unite and form a whole with our environment. If we want to take care of the world, the world must develop a new way of thinking about infrastructure. This means that it should reflect the needs and attitudes of modern society

EP ***Due to the global energy crisis, the issue of energy transition is increasingly coming to the fore, and there is also the need to stop climate change. Is it possible to find technological solutions to these problems?***

We live in times that are both fast and unpredictable, in which we depend a lot on circumstances in the world, but the fact is that advanced technologies are the answer to some of those changes. Innovation and digitization are key to completely redefining economies all over the world. A green, circular economy is not feasible without innovative solutions that will connect our real, physical world and the one we create in the digital domain. Siemens is one of the few technological leaders that brings those two worlds together, offering a synergy of hardware and software solutions that provide users with faster and more flexible operational processes. These smart solutions offer better productivity or infrastructure with efficient energy use.

EP ***How important is digitization for the energy sector?***

Srdan Srdanović The shift from centralized to decentralized systems is changing the sector, as supply and demand converge as consumers alike use and produce energy. The newly created complex situation can be additionally monitored and managed with the help of digitization. For example, we work on connecting energy systems between

various groups, and power plants, that is, making the data produced by consumers represent value for them. That data can increase the resilience of our energy networks and save tons of carbon dioxide.

EP ***Do you think the pandemic has changed people's attitudes towards digitization?***

Srdan Srdanović The COVID-19 pandemic has incredibly accelerated the digitization process, becoming the "new normal". We all do our jobs and live our lives online now, and that trend isn't going away. IT departments have adapted quickly, and when it comes to energy, investments in software and digital solutions have increased.

EP ***The growing global demand for energy represents a major challenge to the smooth functioning of distribution systems. What is the answer to this challenge?***

Srdan Srdanović It is true that the pressure on distribution system operators is increasing because the global energy demand is increasing. The modernization of the distribution network is needed to meet the increased requirements. Therefore, the implementation of the control and automation system answers all these problems related to the improved management of the distribution network.

I will give you a specific example. For now, automation of the medium voltage distribution network has been achieved in several distribution companies in Europe. Automation for the purpose of self-recovery in Europe emphasizes the overhead transmission system. However, the underground cable system is dominant in the center of Belgrade. It is difficult to find faults in underground cable lines in the city center. Dispatch teams in charge of troubleshooting move quite slowly due to numerous technical aspects. Therefore, it is necessary to develop and apply a solution that will be very effectively implemented in the city center. The innovative solution for self-recovery will significantly help the Electric Power Distribution of Serbia to increase the reliability of the distribution network. We are proud that Siemens is a trusted partner in this project in which we offer our technology and expertise.

> Increasing the reliability of the system and ensuring that most customers are supplied with electricity in less than 30 seconds in the event of an outage in the city center was a big challenge for us

Prepared by: Milica Radičević

GOVERNMENT RECOMMENDS EPS TO INTRODUCE DISCOUNTS FOR HOUSEHOLDS

The Serbian government recommended at its session to the Public Enterprise "Electric Power Industry of Serbia" (EPS) Belgrade to introduce a discount on electricity charges for customers from the "household" category and thereby reduce electricity bills, starting with the bill for October 2022 and ending with the bill for March 2023.

Households that reduce electricity consumption by five to 20 per cent compared to the same month last year will be entitled to a 15 per cent discount, while households that reduce consumption by 20 to 30 per cent will be entitled to a 20 per cent discount on their electricity bill.

The biggest discount, of 30 per cent, will be given to households that reduce electricity consumption by more than 30 per cent compared to the same month of the previous year.

In this way, citizens who by saving electricity reduce their electricity bill will receive an additional discount on that bill, in percentages according to the above formula.

The state will stimulate households to reduce electricity consumption, which will help reduce the costs of EPS and stabilise the supply, due to the global disruption in the electricity market and the sudden price jump.

The government also adopted the Action Plan for the implementation of the Strategy for the creation of a stimulating environment for the development of civil society in the Republic of Serbia for the period 2022-2023, with the aim of protecting basic human rights and improving population policy.

Source: The Government of the Republic of Serbia

REVOLUTION IN THE CAR INDUSTRY

PARTS MADE FROM RECYCLED FISHING NETS

In a first for the automotive industry, the models of the NEUE KLASSE due to be launched from 2025 onwards will feature trim parts made of plastic whose raw material contains around 30 per cent recycled fishing nets and ropes. This raw material is proactively sourced at ports all around the world to ensure that it doesn't end up being discarded in the sea.

In an exclusive recycling process, waste material from the maritime industry is used to produce trim parts suitable for the exterior and interior of future vehicles.

The resulting components have an approximately 25 per cent lower carbon footprint than their counterparts made from conventionally manufactured plastics.

Conserving resources, reducing the carbon footprint, avoiding ocean pollution

The BMW Group is working with different approaches to use plastic waste from the maritime industry as a raw material for vehicle components in order to conserve valuable resources and reduce CO_2 emissions. This form of recycling makes it possible to reduce the need for petroleum-based primary plastics and at the same time counteract ocean pollution.

Recycled nylon waste forms the basis for a synthetic yarn from which the floor mats in the BMW iX and the new BMW X1, for example, are made. This material, known as ECONYL, is made from discarded fishing nets well as worn floor coverings and residual waste from plastics production.

Source: BMW Group

Photographs: (top) Unsplash (Andrey Metelev); (bottom) BMW Group

PERFECT TIMING AND THE RIGHT PARTNER FOR BUILDING A SOLAR POWER PLANT

Just ten years ago, the use of renewable energy sources in Serbia was negligible. Here and there, we came across projects of solar power plants for personal use, either on a holiday home in the form of an off-grid system with which the owners solved their electricity needs where there was no grid or on the roof of a company where they visionarily decided to invest and reduce their bills for electricity.

The legislation did not exist, and nobody thought about incentives. It was only in 2017, when the EPS adopted the Rulebook on the operation of the distribution system, that the first positive steps were taken, and the electricity market was formed. During that period, more and more private individuals invested in power plants for their own needs, still not knowing when the investment would pay off.

In the following years, things changed significantly. On the market, there were not only power plants for investors' own needs that were connected without procedures, but more "sustainable projects" appeared – power plants that deliver excess electricity to the grid and sell it to the electricity supplier.

FROM THE CLIENT'S POINT OF VIEW

The global goal of "Toyo Tires" is to become carbon neutral and investing in renewable energy sources is the best choice. This is the right time for us to build a solar power plant in Serbia because the laws regarding renewable energy have changed, so we can acquire the status of a prosumer, while on the other hand we have a large area of land," said Takasago, general manager of Toyo Tires.

Photograph: Pexels/Gustavo Fring

The adoption of the Law on the Use of Renewable Energy Sources last year announced a new incentive program for renewable energy sources and increased workload for companies engaged in the design of RES power plants, primarily when it comes to wind farms and solar power plants. Soon afterwards, we found ourselves in the middle of an energy crisis, which served as an additional incentive for the transition to renewable energy sources.

The industry has a hard time accepting price jumps and reacts to drastic changes by turning to more efficient solutions. This is exactly what happened, so companies increasingly agreed upon the design and construction of power plants with firms that are their comrades on this path of transition. The CEEFOR company has been operating for more than ten years. During its first decade, it tried to enable its clients and partners to reduce electricity consumption, as well as to contribute to the preservation of the environment with significant financial savings. CEEFOR offers its clients consulting and design services in the field of renewable energy sources, and their reference list is exceptional.

Bifacial solar panels increase the output power by up to 20 per cent, depending on the choice of construction, the slope of the panels and the surrounding soil

The Toyo Tires company recently joined this list, for which CEEFOR designed the Toyo Tire Taiyo solar power plant, with a total power of 8.4 MWp. The project included bifacial solar panels that enable the production of electricity from the rear side as well, thereby increasing the total output power of the individual modules. They are an excellent choice for power plants on the ground because they increase the output power by up to 20 per cent, depending on the choice of construction, the slope of the panels and the surrounding soil.

The Toyo Tires solar power plant will cover 8.2 hectares. The annual production of electricity will amount to 10,148,927 kWh, which will contribute to the saving of 8,119,141 kg of carbon dioxide on an annual basis.

Along with the design of the solar power plant, CEEFOR was in charge of preparing the documentation needed to obtain a building permit, which was a challenge because it is a power plant with a capacity of over 1 MW that will be located on the ground, and a simplified procedure was not applicable in this case.

All the necessary steps, information on the location, geomechanical studies, obtaining an opinion for connection and conditions for design and connection from the electricity distribution company, then obtaining location conditions, development of all necessary projects, creation of environmental study, obtaining an energy permit, can be extended for several months. However, thanks to the good cooperation with the investor, local authorities, and all competent institutions, all the mentioned steps were completed in record time so that the investor (as well as the state) could start using the benefits of solar energy.

The plan is for this power plant to acquire the status of a prosumer, that is, to use green electricity for their own needs. At the same time, all excess will be handed over to the electricity distribution network.

Prepared by: Milica Marković

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Photograph: CEEFOR

ENVIRONMENTAL PROBLEMS CAN ONLY BE SOLVED THROUGH A JOINT EFFORT

Although we were taught to put a piece of waste paper in our pocket if there is no bin nearby, we, as a society, were very quick to forget that lesson, although we may have lost some other good habits and good manners along the way too. Therefore, it is not surprising that we have a generally inadequate attitude towards waste, but this time there is no one to blame but ourselves

Estimates show that there are almost 3,500 unregulated landfills and dumps all over the country, and that a fifth of the total generated municipal waste ends up in those locations.

The waste that we create every day ends up in a couple of thousands of unregulated landfills and dumps all over our still beautiful country. What is waste? The Serbian Environmental Protection Agency's (SEPA) website states that waste is any material or object created during production and service activities, as well as objects that are no longer in use or are not fit for further use and must be discarded. Therefore, waste is not only things that end up in the bin.

We have spoken with Stefan Simeunović, Director of the Serbian Environmental Protection Agency, about the current situation regarding unregulated landfills and polluters in the digitalization era and how to create a cleaner environment.

EP ***Unregulated landfills are one of the biggest environmental problems in Serbia. How many unregulated landfills are there in our country, and what is the solution to this problem?***

Stefan Simeunović The data submitted to the Serbian Environmental Protection Agency by local governments show there are over 2,600 unregulated landfills throughout Serbia. Estimates are, however, that this number is almost 3,500 unregulated landfills and dumps all over the country, as well as that a fifth of the total generated municipal waste ends up in those locations. That is why unregulated landfills are one of the biggest environmental problems in Serbia.

Both last and this year, the Ministry of Environmental Protection launched two public tenders for cities and municipalities, which secured the co-financing of projects to remove unregulated landfills. Once the projects based on those tenders are implemented, close to 700 unregulated landfills will have been removed country-wide.

To preserve already cleaned locations, the Ministry also provided funds for video surveillance that local self-governments install on cleaned locations, providing certain technical requirements are met.

The Ministry's competitions are extremely important because they encouraged cities and municipalities to think more about the problem created by unregulated landfills, to nominate projects and, with the support of the state, to finally come to grips with this problem that spans several decades.

EP ***Construction waste is a big segment of the waste deposited in unregulated landfills. How should both individuals and companies properly dispose of this type of waste? How do large companies in Serbia dispose of their waste?***

Stefan Simeunović There are two types of construction waste – non-hazardous waste that is similar in composition to municipal waste (recyclable, inert, etc.) and hazardous waste that requires special treatment (contains asbestos, a lot of heavy metals, etc.) to which special regulations apply.

Stefan Simeunović,
Director of the Serbian Environmental Protection Agency

ARE WE FINALLY GOING TO ELIMINATE UNREGULATED LANDFILLS?

„Due to the complexity of the problem, every local self-government, every able institution and every individual should contribute and support the state efforts to remove unregulated landfills on the territory of Serbia.

To more efficiently solve the problem of these landfills, people can report them through the Ministry's environmental information system called gReact. Although, I must underline that this system is a tool for more effectively solving a much wider range of environmental problems, not only for reporting unregulated landfills. For the first time, the gReact system united all line institutions – communal services and local inspectors coordinated by the state environmental protection inspectors – to act more quickly on submitted applications. The environmental system is connected to cameras installed at the locations where unregulated dumps have been cleaned, to record, in real-time, when unscrupulous individuals dump waste again in a place that has already been cleaned up," says the SEPA's Director.

Photographs: (on the previous page) Pexels/Karolina Grabowska; (bottom) Pexels/Tom Fisk; (Simeunović) courtesy of Stefan Simeunović

The Law on Waste Management and by-laws prescribe that public utility companies cannot be engaged in the disposal of industrial waste, because they are solely responsible for providing utility services and the like. Companies with the appropriate license to remove industrial waste should be engaged, and appropriate documents should accompany each transport of waste.

Both national and local inspections are in charge of checking whether the company has properly disposed of its waste.

EP ***In the future, polluters in all Serbian cities and municipalities will have to submit data relating to their negative impact on the environment to local governments in a digital format. What benefits does the digitization of this data create?***

Stefan Simeunović Earlier this year, the Serbian Environmental Protection Agency launched an important project called Green Digitalization, which was started and is being carried out by our employees as part of their daily activities. The project's goal is to increase the efficiency and effectiveness of the National Registry of Pollution Sources by implementing innovative technologies, providing additional training for employees, improving the safety and reliability of the information system, as well as communicating with users.

The complete digitization of the National Registry of Pollution Sources is an essential process that should lead to the higher efficiency of the Registry's administrators, facilitate reporting to entities that must submit data to the National Registry, and also satisfy the public's need for environmental information.

Digitalization is a prerequisite for successful communication with legal entities and small business owners who are required to report to the National Registry. The significance of this project is best illustrated by the fact that every year the Agency collects over 180,000 reports related to environmental pollution that are stored in the National Registry, which annually generate more than 250 boxes of archived documents. The project eliminates paper reports which are now submitted online.

Regarding the communication between the Agency and users, and under the auspices of the Green Digitalization project, we have established an efficient Customer Care Centre, which provides significant support for businesses, as it deals with over 20,000 inquiries every year.

Creating a new module of the National Registry will boost the availability of data to all interested parties, which is in accordance with the Aarhus Convention.

EP ***Large polluters are obliged to have integrated permits, but the implementation of the Law on Integrated Prevention and Environment Control has been postponed until late 2024. In the meantime, how is the monitoring of large polluters carried out, in which situations are they sanctioned and what are the penalties?***

Stefan Simeunović Companies that are major sources of pollution have a reporting obligation prescribed by the Law on Environmental Protection and the Rulebook on the methodology for creating the national and local register of pollution sources, as well as the methodology for the types, methods and deadlines of data collection.

In short, the plant's operator that is a source of environmental emissions is obliged to monitor via a competent body, authorized organization or independently if they fulfil relevant prerequisites. All subjects of environmental protec-

Companies that have the appropriate license for the removal of industrial waste should be engaged, and each transport of waste should be accompanied by appropriate documents

Photograph: Pexels/Alex Fu

tion, including state bodies, organizations, bodies of autonomous provinces, local self-government units and others, are obliged to submit monitoring data to the Agency in the prescribed manner and under the law.

There are a total of about 280 plants in Serbia that, due to their installed capacities, are included in the so-called PRTR register. The number changes from year to year due to ownership and structural changes or company closures. So far, over 95 per cent of large plants, on average, submit their data on time. Regarding the facilities that do not submit data within the deadline, misdemeanour charges are most often filed against them. Requests for the filing of misdemeanour charges against nine companies that did not fulfil their obligation to submit reports are currently being written.

EP ***Since 2006, the Cleaner Production programme has been implemented in Serbia, with the participation of a total of 94 companies. Could you tell us more about this programme and the companies that participated?***

Stefan Simeunović The concept of cleaner production is an integral part of the planning system in environmental protection. In 2009, the Government adopted the Strategy that stipulates the implementation of cleaner production in the Republic of Serbia, which elaborated the concept of sustainable development by encouraging the use of cleaner production. Bearing in mind that the Action Plan and Strategy expired in 2015, in 2018, the Ministry initiated the procedure for the adoption of a new strategy, which was drafted later that year and renamed "Programme for the Implementation of Cleaner Production in the Republic of Serbia with an Action Plan". However, considering that in recent years, there has been a significant improvement in the legal framework relating to environmental protection and harmonization with EU regulations, which is also confirmed by the opening of Cluster 4, i.e. Chapter 27, which refers to the environment and climate change, we need to improve and harmonize all the legal acts and strategic documents with the umbrella regulations. Due to its great importance, the draft of the aforementioned programme has been revised and harmonized with the existing regulations, and is currently in the adoption procedure.

Interviewed by: Milica Marković

THE CIRCULAR ECONOMY IS THE SOLUTION

Industrial plants that perform activities in category 10 – thermal processes – create the largest amount of waste during their operation. Different solutions for handling waste from this source will be applied to a greater extent as the circular economy system is implemented and developed. According to the circular economy principles, the goal is to reuse waste and become a resource. These types of waste can be reused in the construction of road infrastructure, production of building materials, by mixing them with clinker in cement production, etc.

Photographs: (left) Pexels/Anna Tarazevich; (right) Pexels/Catherine Sheila

SOLUTIONS OPTIMISING BUILDING EFFICIENCY

So far, the importance of digitalisation in business has been discussed on multiple occasions. This time, we aim to focus on building digitalisation and how it can help building owners and maintenance teams make the right decisions and reach their sustainability goals.

This is how Miloš Vuksanović, Sales Director for Commercial and Industrial Buildings, Serbia and Montenegro, Schneider Electric, starts his story about the importance of open BMS platforms and connected smart buildings. EcoStruxure™ Building Operation, as part of the EcoStruxure™ Building solution, is such a platform. In the anniversary year – 20 years of Schneider Electric's operation here, Miloš Vuksanović talks about the significance of meeting sustainability goals and ways to achieve them.

"Our experience in industrial optimisation has confirmed the importance of openness, connectivity and interoperability of platforms, whose functions allow machines to work together in resolving the most complex issues organisations encounter on a daily basis", explains Vuksanović at the beginning, adding that these features are equally important for modern buildings and, as such, are an example of how to achieve zero CO_2 emission.

"To keep global warming at 1.5 °C, it is vital to reduce GHG emission to 45 per cent by 2030 and reach net zero by 2050. Buildings emit nearly 40 per cent of CO_2, and building

owners and managers have to find a way to minimise CO_2 emission as soon as possible." Vuksanović refers to the Paris Agreement.

Schneider Electric believes that new and existing buildings must focus on modernisation, including their transformation to fully electric and fully digital. According to him, it means turning all fossil-fuel-based consumption – such as heating – into a more efficient electric methodology. It also means that with digitalization we receive data to use further for a deeper insight and control of buildings, costs, and efficiency.

Explaining how it functions, Vuksanović says that everything is based on collecting information and the use of automation, acting unanimously to achieve these ambitious goals. In that respect, he points out several items requiring it:

- Systems in a building that communicate mutually – when all systems of a building that exchange information are really integrated and connected, the building maintenance team is enabled to make better decisions.
- The flexibility of a system to adapt and respond to the needs of owners, tenants, and society as a whole today, as well as in the future.
- Achievement of the full potential of all available data.

"New generations of the Building Management System respond to all these needs, and their implementation results in developing buildings of the future. A modern open BMS offers connectivity, interoperability and intelligence. It helps all devices in a building be connected into a shared control centre for managing all operations", Miloš Vuksanović underlines.

He points to the solution of new generation smart buildings available today, including one from Schneider Electric's portfolio.

Open and reliable smart building

„**EcoStruxure™ Building Operation** offers flexibility and scalability, helping in supervision, management and optimisation of traditionally isolated systems", highlights Vuksanović, adding that in addition to systems for air-conditioning, power supply, lighting, security and fire protection, the platform also integrates charging stations of electric vehicles, microgrids and renewable energy sources, as not only a trend, but a reality increasingly present around us.

Also, according to Vuksanović, it can connect with various, smart, connected devices – such as room sensors – in order to continuously collect insights about comfort of a working environment and the wellbeing of tenants.

This solutions offers API tools for continuous expansion of options, from elevator integration to Outlook schedule, with all networks and integrations being cyber secure.

Miloš Vuksanović,
Sales Director for Commercial and Industrial Buildings, Serbia and Montenegro, Schneider Electric

"The platform interprets data to help you manage sustainable development, operational efficiency and tenant comfort. Embedded tools and standards make the data you already have readable, so that you can project new sources that you may need," Vuksanović comments.

He explains that with the implementation of such systems, building management will have full transparency and control over developments in a building, as well as all possible insights into changes that need to be made to improve the building in the future. "With such a system, you need expert support, which we have in our partner network of EcoXpert certified partners, who locally implement these solutions and maximise the operability and efficiency of a building," Vuksanović adds.

As an example of the above, Vuksanović lists, in the end, great examples of buildings worldwide, such as Schneider Electric's IntenCity building in Grenoble, France. With its 26,000m^2, this building illustrates Schneider Electric's vision of future buildings, which they believe have to be sustainable, resilient, hyper-efficient and focused on people. Equipped with EcoStruxure™ Building solutions, IntenCity uses only 37 kWh per square metre. The building efficiency is demonstrated via real-time building management, thanks to monitoring tools that collect information (temperature, lighting, CO_2 levels, space occupancy, etc.). The building records more than 60 thousand data every ten minutes, and sensors automatically reduce energy in empty space.

Prepared by: Milica Marković

Photographs: Schneider Electric

THE EV DAYS EVENT GATHERED MORE THAN A THOUSAND VISITORS

More than a thousand visitors visited the event "Electric vehicles days" (EV Days), which was dedicated to electromobility, a new global technological solution for transporting people and goods.

During the course of the EV Days event, six panels and two plenary sessions were held, which gathered hundreds of students and eminent experts in the field of energy and electromobility. On the first day, participants discussed about the energy transition, challenges and perspectives of the energy sector, electric vehicles as competitors on the market and smart cities. The second day was reserved for discussions on how to overcome the limited range of electric vehicles, then on autonomous driving and the future of the ecosystem and identity of electric vehicles today.

The "IEEE4 Challenge" student competition, which was organized during the event, provided an opportunity for students of the Faculty of Technical Sciences and other faculties from the state and the region to connect with potential employers. This year, the companies Continental, ZF, Charge&GO and Schneider Electric set students four thematic challenges through which they solved problems faced by engineers in the automotive industry.

"We are very pleased to have organized a fair and conference dedicated to electromobility for the second time. This year we can boast of a significantly higher number of participants and visitors, while significant progress has

Dejan Ilić, who invented the lithium battery, held a plenary session at the opening itself

been noticed in the exhibition area as well. On the first day, we had three great lectures and excellent lecturers. Dejan Ilić, who invented the lithium battery, held a plenary session at the opening itself. And I must point out that authorities from this area of the auto industry participated in the other panels", said Sanja Miković, director of the EV Days event.

She particularly highlighted the student competition "IEEE4 Challenge", which was of great interest, as well as the fact that attendance was significantly higher than last year and that the Novi Sad Fair was visited by a large number of people from the entire region.

In addition to the conference and exhibition part, the first 20 visitors who registered on the website of the event had the opportunity to participate in the "testing zone", and the fastest ones tested the most modern electric vehicles Mercedes EQC, Volkswagen ID.3 and Volvo XC40 Full charge in the presence of representatives of car importing companies.

Visitors to the Novi Sad Fair paid special attention to the exhibits in the exhibition area where they could see 17 different models of electric, hybrid and plug-in hybrid vehicles from different manufacturers present on our market: BMW, Mercedes, Hyundai, Volvo, Honda, Porsche, Audi, and Volkswagen.

"In addition to integrating students into the world of business, the goal of the Electric vehicles days event is to present appropriate strategies and incentive measures for the installation of chargers in the territory of the Republic of Serbia, as well as to encourage the faster development of the infrastructure needed for the advancement of electromobility so that it is available to everyone," say the organizers.

The Electric vehicles days event was organized by the Ninamedia company and the Faculty of Technical Sciences, with the support of the Provincial Secretariat for Economy and Tourism and the Novi Sad Fair.

Prepared by: Milica Radičević

The first 20 visitors who registered on the website of the event had the opportunity to participate in the "testing zone"

Photographs: Vertigo production

WWF IS LOOKING FOR CREATIVE PROJECT IDEAS FROM THE CIVIL SECTOR

On our way to joining the European Union, among the most important steps are our answers and solutions to the problems of environmental protection and climate change in the field of legislative frameworks and strategic plans. It's off to a good start. A solid strategic and legal framework for the environment and climate change has been prepared, but the implementation is slow.

There are also numerous environmental problems: water and air are polluted, waste is inadequately managed, natural resources are being depleted, and environmental protection is in last place. Although there are a lot of local movements, civil society associations and activists who try to contribute to changes and implementation of adopted policies in the field of environmental protection, very few of these organizations are sufficiently developed to influence the creation of policies. Only a few organizations have the potential for effe-

ctive engagement and influence on decision-making. At the same time, the majority base their work on activism and have modest capacities for wider action and influencing public processes.

Effective and lasting problem solving can only be achieved through well-structured processes, where strong and credible civil society organizations participate as equal partners to government institutions. Among them is certainly the World Environmental Protection Organization WWF Adria Serbia, which started the implementation of the project "Serbia Actions in the Field of Environment and Nature and Climate – Safe Nature and Climate". The project was supported by the European Commission through the Civil Society Support Program and is a direct response to Serbia's common challenges for global efforts to mitigate and adapt to climate change.

> There are also numerous environmental problems: water and air are polluted, waste is inadequately managed, natural resources are being depleted, and environmental protection is in last place

Goals and conditions of the current project

The strategic grant program is a WWF project whose goal is to form a network of civil society organizations in Serbia that will implement sustainable ideas in the field of environmental and climate protection. The project's main goal is to increase civil society organizations' influence and capacities in dealing with reform and

Photograph: Pexels/Nejc Košir

integration processes in the EU in the areas of environmental protection and climate change.

Civil society organizations can apply if they have project proposals that contribute to the following goals:

- Improving the capacity of representatives of civil society organizations to monitor local and national policies and regulations in the field of environmental protection and climate change
- Research and analysis of gaps in policy management and regulatory frameworks related to environmental protection and climate change mitigation
- Advocacy for correct and effective local and national environmental protection and climate change policies
- Promoting dialogue and active engagement of citizens as a prerequisite for setting up effective environmental reforms and policies for EU accession
- Raising awareness of the importance of establishing correct and effective environmental protection and climate change policies that enable the development of a sustainable ecosystem in the Republic of Serbia.

The project lasts until 2025, and a new call will be announced yearly. Anyone who meets the requirements can apply for a grant in the maximum amount of 18,000 euros. The program is designed in such a way that an organization can apply in the following year with the continuation of the same project or with a different project, but so that the total amount of the grant in these three years does not exceed 40,000 euros.

What do ad-hoc support grants offer?

Another type of support for civil society organizations is reflected in the distribution of strategic Ad-hoc support grants that should enable cooperation with more than 50 civil society organizations throughout Serbia. Funds in the amount of 1,200 euros will be allocated for one-time activities, and the WWF Adria organization says that its main goal is to strengthen the capacity of civil society organizations through customized education and training in the field of environmental protection, the development of an ecosystem that enables the establishment of effective environmental protection policies and their implementation, at the local and national level.

Marina Papović, Program officer at WWF Adria Serbia, explains what Ad-hoc grants actually represent. "It is a specific type of support for project activities that need to be implemented at a given moment, and they concern issues of environmental protection and climate change. They represent short-term support for which civil society organizations will be able to apply throughout the next year. The call will be open from January 2023, and all information about the call and the conditions for participation will be highlighted on the WWF Adria Serbia website."

In addition to financial support, civil society organizations applying for the call will have the opportunity to participate in organized and customized trainings aimed at strengthening the programmatic, operational and management capabilities of these organizations.

Photograph: Pexels/André Cook

"The questionnaire on assessing the needs of organizations, which is also an integral part of the documentation of the first call for strategic grants, serves to determine and assess the shortcomings of organizations and defines the content of the training that will start with the implementation from November 2022. Organizations that did not participate in the call will be able to apply for customized training, and all information about it will be available on our website," Papović points out.

In order to clarify the conditions and rules of applying for the first grant, an Info-session was organized in which more than 90 representatives of various organizations participated. Marina Papović specifies that this is a clear indicator of great interest in this call.

"When we talk about the topic of the call itself and the goals, they are set very broadly and can concern all aspects of environmental protection and mitigation and adaptation to climate change. Our intention was to feel the pulse of the organizations during the first strategic grant and see what are the problems that most concern them in the mentioned area, what are the general shortcomings at the local and national level from the point of view of civil society organizations and in which direction the grant support should be directed in the following years. In this regard, we expect diverse and creative project ideas and proposals", says Marina, adding that issues of environmental protection and climate change have recently been in the focus of the general public due to problems with lack of resources, increasing pollution and the collapse of biodiversity.

"We can say that all the areas listed in the call are equally important and that a systematic and synchronized approach is needed in solving environmental problems at the local and national level", she adds.

Organizations that will be selected for funding under the first strategic grant can expect funding in early 2023, when the dual selection process and application evaluation will be completed.

All information about Strategic Grants and Ad-Hoc Support Grants will be available on the WWF Adria Serbia website and social networks (Facebook and Instagram).

Prepared by: Milica Radičević

The strategic grant program is a WWF project whose goal is to form a network of civil society organizations in Serbia that will implement sustainable ideas in the field of environmental and climate protection

Anyone who meets the requirements can apply for a grant in the maximum amount of 18,000 euros, that is 40,000 euros, within three years

Photographs: WWF

SIEMENS SOLUTIONS FOR THE FUTURE

Company Siemens Ltd. Belgrade participated in the 13th Conference on Electricity Distribution of Serbia – CIRED, which was held this year from September 12 to 16 on Kopaonik

CIRED has been organizing these thematic consultations for years, gathering a large number of experts in the development and distribution of electricity. They are always an excellent opportunity to exchange experiences and visit the exhibition of equipment and services of companies from the country and the region.

At this year's CIRED, Siemens presented its portfolio with presentations on the topics: Siemens – "Blue GIS", SIPROTEC 7SX800 and SIPROTEC 7SX82, SICAM A8000 and e-Mobility. There was high interest in attending the presentation, and the participants could hear about the novelties presented at the company's stand.

"It is very important for our company to appear at CIRED, primarily because we can meet with partners and colleagues in a more pleasant environment. Then we have the opportunity to present new technologies, exchange experiences, hear new problems, requirements and what is new in the profession," says Aleksandar Marjanović from the Siemens company.

He particularly pointed out that this year they presented new functionalities in equipment for protection and management, as well as a new concept for the plant that should reflect the sustainability movement.

"Our new solutions are plants where clean air is used as the insulating gas, which does not have any greenhouse coefficient, and the plan is to replace all existing SF6 plants, which have a large negative impact, with these plants by 2050," Marjanović explains.

The organizer of this year's Conference is the CIRED National Committee of Serbia in cooperation with the CIRED National Committee of Montenegro. The company Siemens was the Golden sponsor of the event on Kopaonik, as well as an active participant and partner of CIRED since its foundation.

Photographs: Siemens

Smart infrastructure
for a sustainable future

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SIEMENS

charge&GO IS EXPANDING THE CHARGING NETWORK

The first thing that comes to mind when you think of an electric vehicle is where to charge it! A well-distributed charging network is essential for electric car drivers to plan their journeys. The first digital platform and application, **charge&GO**, is available for quick and easy finding electric chargers and simple charging.

They contribute to the development of electromobility in our country by promoting and installing chargers. So far, electric chargers with power from 22 to 180 kW have been installed at more than 40 locations on the roads and highways of Serbia, and by the end of the year the network

So far, electric chargers with power from 22 to 180 kW have been installed at more than 40 locations on the roads and highways of Serbia, and by the end of the year, the network will cover as many as 100 charging points

will cover as many as 100 charging points where there will be more and more fast high-power chargers.

Following the successful beginning of the year when the company **charge&GO** put into operation a 120 kW electric charger at the OMV gas station in Lapovo, at the beginning of July, the strongest charger for electric vehicles in their network was installed at the OMV gas station Martinci 1, in the direction to Belgrade.

The charger on this gas station has an output power of 180 kW, and its maximum power is 300 kW. The plan is to gradually increase that power to its total power by simply adding energy modules. The Unity 180 charger, manufactured by Kostad Siemens, is manufactured in Austria and operates at temperatures ranging from -30° to +50° C. It supports the CCS standard for DC charging, and the output power, if both CCS ports are in use simultaneously, is 2 × 90 kW.

Owners of electric vehicles have the opportunity to use other ultra-fast chargers located at OMV gas stations: in Doljevac, on the Niš-Vranje highway, where a 150 kW ultra-fast charger has been installed (the second most powerful electric charger available at OMV gas stations), at Gradina, the border crossing near Dimitrovgrad (90 kW), as well as in Bačka Topola where there is another Unity 180 kW.

Photograph: charge&GO

The easiest way to check the locations and availability of chargers in this network is the Charge&GO application

New charging points in retail chains

In addition to the strategic expansion of the network of ultra-fast chargers on highways, the hardworking employees of the company **charge&GO** are also installing chargers at the Stop Shop retail chain locations. From the beginning of August, drivers of electric vehicles can stop by the Stop Shop in Sremska Mitrovka, Lazarevac, and Požarevac and recharge their batteries Since September, a 120 kW charger has been operating in the parking lot of the Stop Shop in Vršac. It is expected that power chargers in the range of 24 to 120 kW will soon be put into operation at other Stop Shop locations throughout Serbia.

Electric car drivers know that the **charge&GO** network map is the easiest way to locate all chargers. We should mention fast and ultra-fast chargers at GAZPROM gas stations and four toll booths on the highway near Vrčin, Horgoš and Trupala-Niš. Schneider Electric AC chargers are available in Novi Sad and Kragujevac, in the Promenada and Big Fashion shopping centers. The **charge&GO** network was also chosen by representatives of the automotive industry in Serbia, such as British Motors, AK Kompresor and Hit Auto.

What does the **charge&GO** platform offer?

The **charge&GO** digital platform and application allow drivers of electric vehicles to locate the nearest chargers easily and charge their cars quickly and easily. The platform provides drivers with an efficient service for charging and paying for the use of charging points, as well as the ability for companies to manage their charging network remotely. It includes several services, such as charging control, charger monitoring, pricing, usage restrictions and charging session overview.

The easiest way to check the locations and availability of chargers in this network is the **charge&GO** application. Although all chargers can be accessed in multiple ways (via QR code or charger number), if you download the app, you automatically get a lower price, GPS navigation directions and access to an incredibly extensive network of 170,000 chargers in 30 countries across Europe.

CONFERENCE "RES SERBIA 2022"

The second conference dedicated to green energy, the current energy crisis, challenges, and financing, "RES Serbia 2022", was held on September 15 at the Metropol Hotel in Belgrade, organized by the Association Renewable Energy Sources of Serbia, with the support of the European Bank for Reconstruction and Development (EBRD) and the organization WindEurope

In his welcome speech, Miloš Colić, the chairman of the RES Serbia association, pointed out that power plants cannot be built overnight and that renewable sources cannot wait any longer. "Renewable energy sources are a chance to get out of the energy crisis. The state must pass legislation as soon as possible. Despite the announcements, the auctions have not been held yet," said Colić at the opening of the conference.

According to Zoran Lakićević, State Secretary in the Ministry of Mining and Energy, the legal framework has already been set, but the public-private partnership has not been launched yet. "Energy security is our security. The fact is that we import electricity every day, energy prices are high, and the upward trend will continue during the winter. What we started last year helped to get through this winter without restrictions. Energy security costs us two billion euros, which is necessary for the import of electricity and another billion for the import of gas," said Lakićević, adding that savings are mandatory, and that in the past three months, 230 contracts were signed with prosumers at the household level.

Matteo Colangeli, Regional Director of the European Bank for Reconstruction and Development (EBRD) said that this bank participates in financing renewable energy projects. At the same time, Giles Dixon from WindEurope pointed out that no one could have guessed the intensity of the crisis. He also said that, in addition to the energy crisis, there is also the problem of climate change, but that the only way to deal with all this is to switch to renewable energy sources.

Jelena Matejić, from the company Elektromreža Srbije, emphasized that this company has never been against renewable energy sources, nor will it ever be. "We need greater investments in renewable sources, including wind, solar, and hydropower. In nine years, EMS had investments of 330 billion euros, and in the next eight to 10 years, investments of 700 billion euros are planned," said Matejić.

She added that four wind power plants with a total power of 392 megawatts have been connected to the network in the past five years. "We need secure supply, sustainability of the power system and energy independence," concluded Matejić.

Energy crisis and development of RES projects

The first panel was dedicated to the impact of the global security, economic and energy crisis on the development of RES projects. It was attended by Dirk Buschle, Deputy Director of the Secretariat of the Energy Community, Alessandro Bragonzi, Head of the EIB for the Western Balkans, Dragan Vlaisavljević, Executive Director for electricity trade PE EPS, Jadranka Atanacković, State Secretary of the Ministry of Mining and Energy and moderator Nenad Jovanović, from the company LDK consultants.

Dragan Vlaisavljević spoke about the plans of EPS to revitalize the existing hydroelectric power plants by 2025, followed by investments in solar power plants. When it comes to wind farms, Kostolac should be put into operation in two years, and the construction of two more wind farms with a total power of 300 MW is under preparation.

Vlaisavljević also mentioned the construction of the reversible hydroelectric power plant Bistrica, which was presented as one of the most important investment projects in Serbia's energy sector.

Jovanka Atanacković pointed out that we need to be energy secure and import electricity every day. She mentioned that we must be "open to all kinds of energies".

"The plan is that by 2030 RES will participate with 40 per cent in the energy mix, which means that we have to build new capacities. Currently, 37 megawatts are in the process of being connected to the grid," said the state secretary.

Market challenges, regulations, and investments in RES

The second panel discussed the key elements for implementing wind farm projects and other renewable energy sources. The participants of this panel were: Anne-Catherine de Tourtier, the managing director for the Mediterranean at Nordex, Grzegorz Zielinski from the EBRD, Ubaldo Janez Dijaz from the Masdar company, Marko Lipošćak, representative of the Enlight Renewable Energy company, and moderator Ivan Komušanac, from the WindEurope organization.

We need secure supply, sustainability of the power system and energy independence

"Serbia is a country where it is possible to install the most modern technology. There have been big changes in

Photographs: RES Serbia

Project financing and environmental protection

The participants of the second and third panels discussed the financing of projects and their development from the point of view of environmental protection experts.

When it comes to investing, the EBRD says that Serbia is very important to them, so it can be expected that they will invest more in green projects. "We will finance the construction of wind farms in Serbia with commercial banks," said Matteo Colangeli who added that they are focusing on both the private and state sectors.

Dimitar Enčev pointed out that Serbia has started well when it comes to RES, but that, unfortunately, there has been a significant slowdown. He noted that work should be done

> No one could have predicted the current energy situation and the price of electricity, which is very high in all markets

prices, and everyone must bear higher costs, but we have to create energy independence," said Anne-Catherine de Tourtier.

Marko Lipošćak underlined that the current price of electricity is good news for those who produce it, while it is bad for customers. He added that the process for issuing permits in Serbia is quite good.

"Project planning is good, but many challenges accompany execution. Now, more attention is being paid to ecology and environmental protection," said Lipošćak, noting that in Croatia, the issue of permits is at a standstill, much more than in Serbia.

Integration of RES into the electricity market

The panel moderated by Marijan Rančić from the company New Energy Solutions attracted the most attention at this conference.

Panel participants were Miloš Mladenović from SEEPEX, Marko Janković, representative of EMS, Ante Tojčić from Fractal, and Aleksandar Stefanović from Green Balancing Group. They jointly expressed the view that no one could have predicted the current energy situation and the price of electricity, which is very high in all markets. This is particularly worrying because it can jeopardize the operation of the electric power sector and the operation of the market itself.

on improving the network and new capacities. Nikola Vuletić, representative of UniCredit Bank, Nikola Stamenković from ERSTE Bank, and Igor Anić, representative of ProCredit Bank, also spoke on the second panel while the moderator was Ksenija Karić, director of Schneider Electric Serbia.

Experts from our country and abroad discussed the important aspect of environmental protection during the planning and construction of RES plants. Everyone agreed that biodiversity is a significant topic when it comes to the construction of RES power plants. Nikola Stojnić from the Institute for Nature Conservation pointed out that on the territory of Vojvodina, more permits are sought for the construction of wind farms than for solar power plants. He emphasized that a study of the impact on bats and birds must be done. The panelists, Tony Iles from Pepper Advisory Limited, Nilaj Ajgunej Berke from IFC, and Ljuboslav Lenhart, representative of New Energy Solutions, almost unanimously emphasized that the local community should be informed about the construction of such projects and that open discussion is always the best way.

"I don't think there will be a limit on electricity prices at the EU level, and if it does, I don't know how it will be implemented. Then we destroy the market because it can no longer function according to its principles," says Janković.

The participants also referred to the possibility of limiting consumption in Europe. Savings measures have been adopted, but it is not clear how they will work and how they will be controlled.

Like last year, this year's "RES SERBIA 2022" conference was of great interest to the domestic, regional, and European professional public. The prevailing view among the panelists was that even though we are in uncharted territory at the moment, there is an opportunity for progress in the energy sector through greater use of RES. The main goal is for Serbia to be an energetically strong country, and establishing the regional stock exchange for Eastern and Southeastern Europe, which is expected this year, should also contribute to this goal."

Prepared by: Milica Radičević

WORKING DAILY IN PEOPLE'S BEST INTERESTS AND PRESERVING THE ENVIRONMENT

Our planet is facing major environmental challenges. Awareness of how important environmental protection is for our future has been growing, so a new economic model, such as the transition to a circular economy, with waste reduction and resource conservation, is being imposed as an indispensable prerequisite for further sustainable development worldwide. The natural order implies primary prevention and adequate management of waste, its reuse, recycling and disposal.

The most advanced regional sanitary landfill in our country is located in the town of Pirot, which treats waste both from Pirot and nearby towns of Babušnica, Bela Palanka and Dimitrovgrad. After three years of operations, and all the energy and effort invested in this project, the positive effects are multiple.

Director of the Public Utility Company Regional Landfill Pirot, Nebojša Ivanov, is happy with the company's results. He underlines that the landfill did not negatively impact the environment in any way, highlights the experience they have gained in non-hazardous waste management, and

Photographs: Pirot Regional Landfill

Nebojša Ivanov,
Director of the Public Utility Company Regional Landfill Pirot

ABOUT THE LANDFILL

The landfill was built in 2010 and 2011, and it was officially commissioned in January 2013. Since then, ending in December 2021, 350,000 tonnes of waste have been deposited there. The capacity of the cell is sufficient to last for another two to three years. The treatment, accommodation and disposal of non-hazardous waste from the area of Pirot and its surroundings are functioning as they should.

"In addition to reducing the amount of deposited rubbish, the modern secondary separation line separates plastic, cardboard and paper waste from food scraps and other materials, and then bales and disposes of it," Mr Ivanov told us. Part of the waste is exported, while part is transported to Vojvodina. There are also plans for the construction of a compost plant, as well as the purchase of a plastic granule production, which would generate even more profit for the landfill.

mentions a financial profit that they have channelled into further investments in infrastructure and its development in the segment of non-hazardous waste management.

EP ***Earlier, you announced that, during the second work phase, a second cell will be built on the landfill while the first cell would be rehabilitated. How far have you come with that? When will the second cell be commissioned?***

Nebojša Ivanov The European Bank for Reconstruction and Development has approved a loan to the Ministry of Environmental Protection to be used for the construction of the second cell, rehabilitation and reclamation, i.e. closure of the first cell. The operational talks are concluded, and I hope that we will sign the contract in the next few months. We spent the previous period talking with consultants, and the activities on closing the first cell and building the second should commence in early 2023.

Our goal is not to constantly build and fill cells with municipal waste. Our idea is to drastically reduce the amount of municipal waste that we dispose of.

EP ***What can you tell us about the regional recycling centre?***

Nebojša Ivanov In 2017, the town of Pirot and the landfill applied for the funding of the Primary Selection Project, which is financed from IPA funds, and we started the implementation phase. To be selected for the implementation of the primary selection process for the Pirot district, which value, according to our project, is 1.4 million euros, the main prerequisite was that there was a secondary separation line.

In late 2018, we started drafting project documentation, and in early 2019, we received a building permit to construct a secondary separation line. In mid-2019, we commenced construction work, including the construction of a hall, supporting facilities, the entire infrastructure (electricity, water, sewage, and wastewater), and the installation of the required line.

The project was completed in February 2022, and the secondary separation line has been operating at full capacity since mid-April.

The total amount paid to suppliers and contractors was 264 million dinars, including VAT, of which the Ministry of Environmental Protection provided 164 million dinars, and the landfill provided 100 million dinars from its own revenues.

> We want to see as little municipal waste as possible being deposited at the landfill, and as much of it recycled as possible. We want to motivate citizens to participate more in the primary waste selection

We are currently putting together the documentation for obtaining a use permit, i.e. we will become a public facility with a use permit, which just demonstrates that we have successfully completed the entire project.

EP ***The Pirot regional landfill is the only landfill of this type in Serbia.***

Nebojša Ivanov Exactly! I am proud of everything that has been done so far – now, we have a cell, the special secondary separation line. Since September, we also have a primary waste separation line that works at full capacity. We also adequately manage packaging waste and municipal packaging waste. Furthermore, we are embarking on building a composting plant under the auspices of the project financed from the EBRD loan, through the Ministry of Environmental Protection, the value of which is around 3.5 million euros. We also have project documentation and a building permit in place.

A composting plant is the next logical step because as much as 40 per cent of the received waste is biodegradable, which, when processed, can be sold as high-quality fertilizer. This also reduces the amount of waste deposited at the landfill.

The landfill has a comprehensive monitoring system that monitors and acts preventively on the recirculation system, which has flowmeters, an isometric grid, a process water quality monitoring system, and a meteorological station. We do a lot of work, and I think we are an example of good practice, perhaps the best in the region. For instance, a country like Croatia does not have a secondary separation line like ours. We built the landfill based on the project from Szeged.

EP ***How will you further help the citizens and involve them even more in your campaigns?***

Nebojša Ivanov We need to create an infrastructure that will help citizens adequately participate in the primary

PLANS READY, WAITING FOR FUNDS

By the end of the year, we plan to complete a project for the disposal of construction waste and inert material. This is important because the construction waste will then not end up in the landfill, but secondary raw materials will be extracted from it, which will be used for the road industry and construction. Construction waste is accumulating rapidly because the town is developing. We competed for funds for the implementation of this project and there are positive signals that we will get the required 900,000 euros.

We are also planning projects that we will finance from our own funds. The first is the construction of a 150kW solar power plant, for which we have already secured funds and carried out the relevant public procurement process. The project is expected to be completed in November.

Additionally, we acquire a washing and disinfecting line for truck undercarriage, and we will be the only landfill that has it. We are only 4.5km away from the city, so I think it is not appropriate for trucks to drive directly from the landfill to the city centre. That's why every truck that leaves the landfill will be disinfected and its undercarriage washed. The project documentation for this project has been completed, we are nearing the end of the public procurement process and I expect that the project will be launched soon.

I would also like to mention two more new projects – a project entailing the further treatment of secondary raw materials that we separate via primary and secondary separation processes, as well as a plastic mill that we plan to install because we want to get closer to the recycling industry and realize greater financial potential. There is also a project for the production of wood chips and the use of biomass. Schools in Pirot consume about 150 tonnes of wood chips for heating annually, and the Pirot heating plant should definitely start using biomass. We have enough initial resources for scrap wood. We organize waste collection from households, commercial and trade sectors and institutions. We already have about a hundred tonnes in stock, and the goal is to increase the amount of collected raw materials by stepping up our activities and thus be properly provided for in the coming season.

waste selection. With our activities, we try to gain their trust, and we want our citizens to be sure that their efforts in separating packaging, glass and cardboard are valued. Citizens should know that separated waste does not end up at the landfill, but is transported to the secondary separation centre.

Furthermore, we have been talking to the mayor about an additional stimulus for citizens. The idea is that each household gets two bins for the primary selection of waste – dry and wet – and residential communities are given proper containers. Dry waste includes recyclables such as paper and glass. All bins and trucks will be chipped so we will know exactly how much waste each person has left and their utility bill will vary accordingly. The investment in chips is not big, but it stimulates citizens to treat waste properly and is effective. The household should not pay for waste removal based on its size or the number of household members who live there, but on the quantity of wet waste they dispose of, and the waste removal bill should reflect that.

We want to see as little municipal waste as possible being deposited at the landfill, and as much of it recycled as possible. We want to motivate citizens to participate more in the primary waste selection. It would be good to launch a media campaign and we also need to apply the good examples we have seen in European cities. It is important to point out that this is a financial investment that we can afford.

EP ***What challenges do you have to overcome in your line of business?***

Nebojša Ivanov Challenges are a daily occurrence. The system needs to become self-sustaining, primarily in the technical-technological sense, because it requires constant engagement, adequate maintenance and management.

The second challenge is financial, meaning that financing should come from our revenues. At this moment, the Pirot Regional Landfill charges the lowest waste removal fee in Serbia.

The third challenge is the human factor, a resource that needs to be improved and adequately rewarded and stimulated. The human factor should develop further and contribute to the system.

EP ***You have also mentioned the monitoring system installed at the Landfill. Could you tell us more about it?***

Nebojša Ivanov The Law on Waste Management treats a landfill as an engineering facility that does not negatively environmental impact. This distinguishes a sanitary landfill from an ordinary landfill, that is, an unsanitary landfill. We respect the relevant monitoring regulation and have an excellent monitoring system in line with our legal obligations. All analyses are performed by referential laboratories and based on them, we draft a quarterly report that is then forwarded to the Environmental Protection Agency.

So far, we have not had negative results regarding the landfill's environmental impact. To be able to act preventively, we have established a unique piezometer network that monitors the underground water in real-time and online, a system for recirculating process water, so to prevent process water from ending up in rivers and water streams in general, as well as an automatic meteorological station that observes all parameters in real-time – degree of evaporation, sunny days and the like.

The process consists of three parts, and we have a flowmeter – a process water levelling system that measures the amount of process water entering the pool, online monitoring of its quality according to four parameters, and a recirculation system that monitors the amount of water that is dumped into the landfill, i.e. to monitor the balance of process water daily. Thanks to online monitoring, we can react quickly in the event of a possible leak, before any negative environmental impact occurs.

Furthermore, the automatic meteorological station measures the amount of precipitation, evaporation and other parameters every second. So, if one hundred cubic metres of water came out today, at a 10 per cent evaporation rate, 90 per cent of it would end up in the recirculation system.

EP ***What can you tell us about the recycling yard project?***

Nebojša Ivanov We intend to establish an adequate collection of municipal packaging waste so that all waste that is not fit for use in the household, trade or commercial sector is adequately utilized. There is a location about a kilometre and a half from Pirot, which the town administration gave us, where we want to build a recycling yard, in accordance with the Law on Waste Management, and which will be accessible by all standards.

The project documentation will have been completed by the year-end and the plan is to secure enough funds next year. The idea is that citizens can always bring waste to the recycling yard. We will further increase our activities in the spring and summer and collect bulky waste from citizens on site. Our goal is to gain their trust and show that we are available every day. We want to launch a campaign that would animate people even more and have an intervention group going out to the field and removing waste when called upon. We are aware that most citizens do not have trailers or the possibility to organize the transport of waste. Some live in high-rise buildings and cannot bring bulky waste to the recycling yard. The yard's proximity to the town is very important, because, among other things, one of the main prerequisites for its construction is that it is easily accessible to citizens.

The Centre for the Reuse of Usable Items is among the ideas awaiting their implementation. We will have written the project documentation by the year-end and receive funds from the European Commission. All items that have a useful value will be repaired, fitted out and made available for further sale at the Centre. We have a lot of chairs, tables and wardrobes that can be resold and used instead of ending up in a biomass plant. This is a normal practice in Europe – people have no problem buying items from such a centre because they contribute to preservation of the environment and that's something to be proud of. Our goal is to make Pirot a green city, and we are guided by the principles of the circular economy.

Our responsibility is great. We use public funds and public resources, and we must take due care that these resources are adequately used and create additional benefits for our citizens.

Interviewed by: Milica Marković

INTERNATIONAL INVESTMENT CONFERENCE

SEE ENERGY – CONNECT & SUPPLY

The fifth international investment conference SEE ENERGY – Connect & Supply, on the topic "Western Balkans facing new energy challenges" was held on October 13 and 14 this year at the Sheraton Hotel in Novi Sad. Through four themed panels, the conference brought together representatives of state and international institutions, representatives of business and industry, as well as potential investors in green energy.

The conference organizers are the National Association for Biomass "Serbio", the European Bank for Reconstruction and Development EBRD and the German Organization for International Cooperation GIZ, with the support of the Ministry of Mining and Energy and the Chamber of Commerce of Serbia.

RES in District heating and cooling systems

"District heating systems play a key role in the sustainable functioning of the entire energy system" – said Bojan Bogdanović, manager of the Renewable Sources in Remote Energy Fund (ReDEWeB) within the EBRD Bank and moderator of the panel. For district heating systems to continue to represent part of the solution (and not part of the problem), it is necessary to systematically work on the replacement of imported fossil fuels (natural gas, fuel oil and coal) with renewable energy sources that use domestic resources such as solar thermal technologies, geothermal energy, heat pumps and waste industrial/urban heat.

The panel attracted numerous representatives of heating plants, state and public institutions, international organizations, as well as representatives of the energy, economy, and industry sectors.

The significance and potential of biomass in the development of the national circular economy

Constructive and open to questions from the audience, he presented the potential of biogas and biomass, which according to official data, represent the most significant RES potential in Serbia; as much as 67 per cent of that energy is unused. These data indicate that there is a large available potential, especially when it comes to agricultural biomass. Wabio company, Consultare, Polytechnik, SGS company, UNDP organization, Chamber of Commerce of Serbia, Erste and ProCredit bank participated in the panel.

Electromobility, challenges of infrastructure and charging technology

Serbia needs to use the technology and knowledge of renowned companies from Europe in the field of electromobility on our market – this is the conclusion of the panel "Electromobility, challenges of infrastructure and charging technologies".

Very constructive and dynamic panel was moderated by Nevena Đukić, editor of the Energy Portal, in which Darko Zeljković from Schneider Electric, Dejan Dešić – ABB Serbia, Dejan Milovanović – Siemens Serbia and Miloš Kostić, Charge&GO selflessly shared their knowledge, experience and information with the attendees.

Prof. Ph Nenad Ivanišević, Provincial Secretary for Economy and Tourism, also presented their contribution and member of the Executive Council of ProCredit Bank, Ivan Smiljković, examples of good practice and future projects. Dario Jurišić, head of the technical sector of GSP Novi Sad, presented a pilot project and announced the electrification of city transport in Novi Sad – 10 electrically powered buses that will arrive in March 2023, according to plans.

Using solar energy through the PROSUMER approach

Organized by the National Association for Biomass "SERBIO" and the German organization for international cooperation GIZ, as expected, it attracted many interested future and current owners of solar power plants, who followed the conference with a physical and online presence.

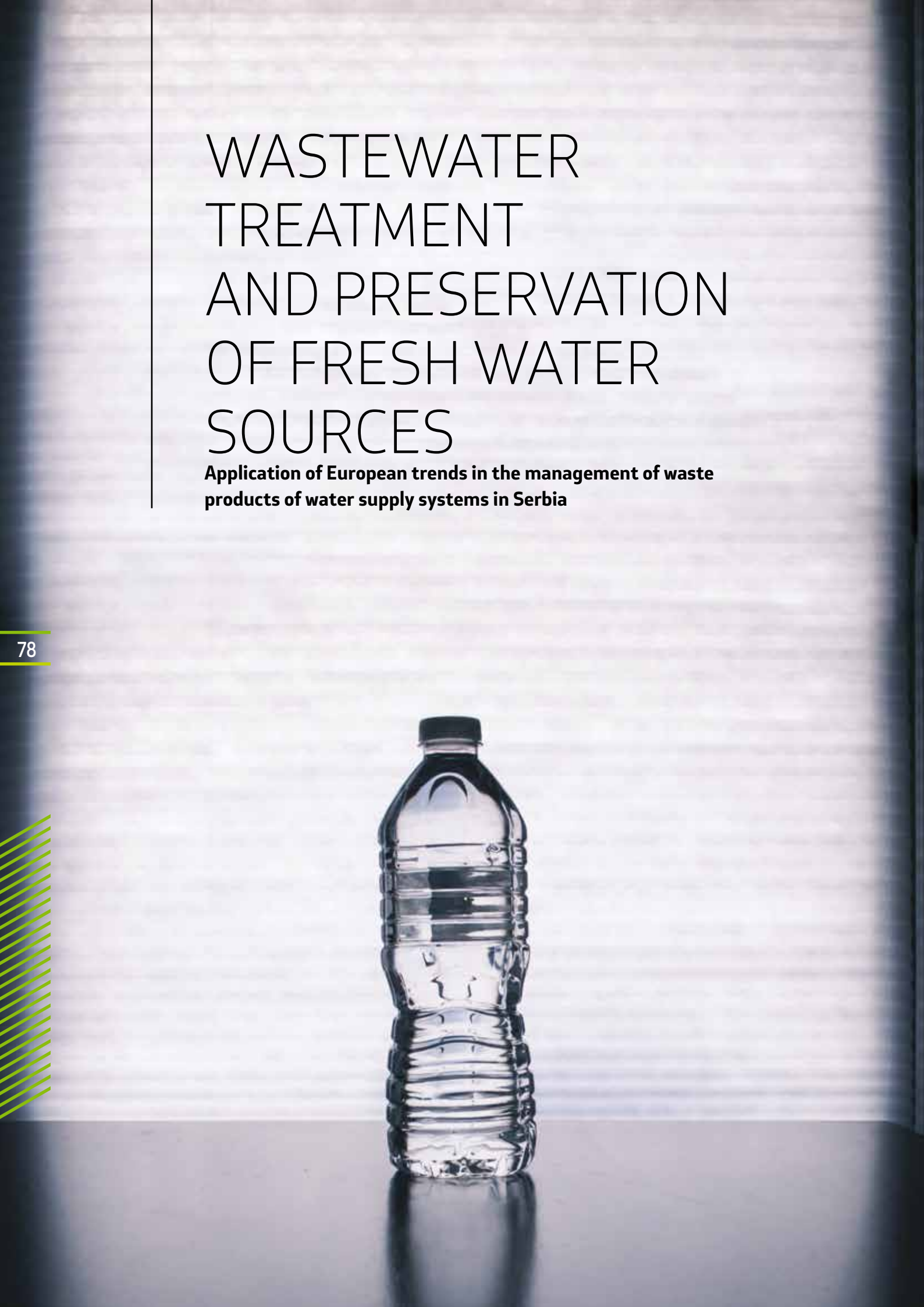
Through three thematic panels, the conference covered all the necessary questions and answers that every potential investor of solar power plant has.

The goal of the conference was to present the latest achievements in the application of renewable energy sources in district heating and cooling systems, the presentation of projects that actively participate in reducing dependence on fossil fuels (mainly solar thermal, geothermal and heat pumps), as well as the promotion of RES potential in Serbia and in the region of the Western Balkans itself, as an excellent market for potential investments and investments by private investors.

Photographs: SERBIO

WASTEWATER TREATMENT AND PRESERVATION OF FRESH WATER SOURCES

Application of European trends in the management of waste products of water supply systems in Serbia



There is increasingly less drinking water on our planet, and serious global conflicts over drinking water are looming on the horizon, as the global crisis is already widely present due to the increasingly difficult provision of the basic needs of the human community, primarily the population living in the planet's southern hemisphere. The uneven distribution of water resources (unevenness of water flows per unit of time) determines the availability of fresh water, which is one of the most significant limiting factors in development worldwide.

Due to insufficient reliability in providing the required annual quantities of drinking water for its population, this is a dominant item in strategic planning in the most developed countries. According to statistical data, Europe, for instance, has only 8 per cent of the world's renewable freshwater resources, and at the same time, participates with 15 per cent of the total world consumption. The availability of quality water varies significantly within the same region, and in addition to natural factors such as geographical location, relief, precipitation and air temperature, the quality of water resources is also influenced by various anthropogenic factors.

> Wastewater treatment enables the preservation of freshwater sources and increases the capacity for their use

According to the data collated by the Serbian Hydrometeorological Service (RHMZ), climatic influences in Serbia imply a constant and slight increase in air temperature in the last 40 years (according to statistical data starting in 1983), as well as the trend of decreasing precipitation in summer and increasing precipitation in winter months. We can conclude that these are not the exclusive, nor the dominant factors jeopardizing the supply of water resources in this region.

Waste of anthropogenic origin is the biggest problem causing the pollution of both surface and underground watercourses. In contrast to European countries, where 40 to 90 per cent of the generated waste is regulated, starting from separation, through reuse and treatment, to the full implementation of the circular economy principles, in Serbia, only 8 to 10 per cent of the generated waste is regulated. These most often include sanitary landfills, but without adequate segregation and regulation of leachate, with a very small per centage of reuse, recycling and creation of competitive market products.

Also, in addition to the discharge of municipal water into surface watercourses without prior treatment, the key sources of pollution are untreated industrial wastewater from various industrial plants, mine water, agricultural waste drainage water, and pollution created by thermal power plants and river navigation. Serbia needs to protect the space and catchment underground water areas, as well as existing and planned accumulations of surface water. The goals of the EU directives that are valid until 2030, then until 2040 and 2050, are also partly ultimatums for Serbia.

Wastewater treatment enables the preservation of freshwater sources and increases the capacity for their use. The implementation of the circular economy principles in the processing of wastewater from water supply systems should result in the reuse concept, which becomes the realized value of wastewater because it transforms the expensive wastewater treatment service into a self-sustaining service that generates economic importance.

Conventional water supply systems in Serbia process water mainly from surface watercourses by intaking water from a specific reservoir, through PH value correction (alternatively), purification, filtration using sand filters and mandatory chlorination. In the Belgrade water system, river and well water are purified

MARINA STRIŽAK JANJUŠEVIĆ was born in Belgrade and graduated from the Faculty of Mining and Geology in Belgrade, majoring in the exploration of mineral deposits. She completed her Master's studies in environmental protection at the Futura Faculty of Applied Ecology. She has been working at the Belgrade Waterworks and Sewerage Public Utility Company since 1990. In 2020, she was hired as the ADR advisor, an independent professional associate and a person responsible for waste management at Belgrade Waterworks and Sewerage. Ms Stržak Janjušević is the author and co-author of numerous professional and scientific works, a guest lecturer, an active participant in scientific meetings in the country and abroad and a participant in ecological projects. She speaks fluent English and French.

Photographs: (background) Pexels/Steve Johnson; (top) courtesy of Marina Stržak Janušević

in a somewhat more contemporary way via ozonation, UV disinfection, filters with activated carbon and using tuff in the treatment of river water, while the purification of well water begins with aeration.

What is common to all drinking water processing plants is maintenance, the so-called washing of filter installations with clean processed water. During the process, a certain amount of wastewater is created, used for its own consumption. Own consumption, depending on the degree of filter dirtiness, amounts to 4–17 per cent of the total produced water at the given plant. This means that, for instance, a plant that produces 1500l/s, i.e. about 4,000,000m^3 per month and about 48,000,000m^3 per year, can use up to 7,000,000m^3 of clean water annually for its own consumption.

The public enterprise Belgrade Waterworks and Sewerage washes its filters one by one (two or more filters cannot be washed at the same time) in the following way – after purging it with air, the filter is washed with water at a flow intensity of 570l/s, between 20 and 25 minutes, until the turbidity value reaches 0.1NTU, where 700 to 900m^3 of clean water is consumed per filter.

As the filter washing water goes directly into the sewage system, a turbidity/NTU test was performed by an accredited laboratory during the washing of filter installations which determined that after 4 minutes, the turbidity of the wastewater drops exponentially to the turbidity limits of the recipient water. After additional physicochemical and

Photograph: (top) Pexels/Steve Johnson; (bottom right) Pexels/Snapwire

microbiological tests, it was concluded that only 15 per cent of the filter washing water has elevated parameter values compared to the recipient's raw water, while 85 per cent of the wastewater is within the parameters of the recipient's water (if, for example, 700m^3 of washing water was used which means that 595m^3 does not differ in quality from the incoming water at the intake).

This implies that through recirculation, without any treatment, 85 per cent of the water from own consumption can be returned to the beginning of the drinking water treatment process. In comparison, the other 15 per cent of wastewater (in this particular example, about 100m^3) needs to be treated through re-sedimentation in a dedicated sedimentation tank. The concept of the required facility is based on technological procedures that are separated by location, and form a continuous whole made of the line for intaking and distributing wastewater, the pumping line, the sedimentation line, equalization and the sludge processing line.

After this process, it is necessary to check the quality parameters in the equalization basin, from where it is also possible to return this wastewater segment to the beginning of the purification process so that nothing is released into the sewage system.

Serbia should invest much more in environmental protection, waste management, circular economy and protection of natural resources, to avoid or reduce the coming deficits of natural resources

Photographs: Pixabay

The sludge produced during the aforementioned procedures should be separated, dehydrated by one of the procedures (this type of sludge contains at least 96 per cent water), characterized and considered for reuse.

A properly designed wastewater treatment plant with a 100l/s volume requires smaller investments because it has a small capacity. The investment for a plant of this type is also lower in the sedimentation process, because, for example, a sedimentation tank with lamellae is significantly cheaper than a filter plant. At the same time the other required facilities are almost identical and proportional to the capacity.

Interest in sludge production, disposal, recycling and reuse is growing rapidly in Europe and the world. In order to control possible risks, legislation was introduced at the European and national levels. Sludge is an even bigger problem than wastewater because sludge's impact on pollution is more noticeable, and polluting substances are in a more concentrated form. In Europe, the production of dry sludge per inhabitant is 90g/day, and it comes from the primary, secondary and tertiary treatment of wastewater.

Obviously, Serbia should invest much more in environmental protection, waste management, circular economy and protection of natural resources, to avoid or reduce the coming deficits of natural resources, especially drinking water, which inevitably becomes an ecological imperative.

SCOBY – INSPIRATION IN A GLASS OF KOMBUCHA

Chances are you've heard of kombucha, a drink made from green or black tea with added sugar and bacteria or yeast. You may have even wanted to check out its widely known medicinal properties, which referential laboratories now confirm. Or, during preparation, you were repulsed by the gelatinous lump that formed on the surface of the container as a result of the fermentation process. This gelatinous mass gave a completely different ecological idea to an artist from Novi Sad.

Adrienn Újházi is a painter who examines the relationship between man and nature in her artwork. She also advocates a special artistic practice called bio-art, which implies using of biotechnology and organic material suitable for different media such as painting, drawing, video and installation. Her goal is not only artistic but also ecological. Adrienn wants to create, but in such a way that synthetic materials are used only when necessary and that her artwork creates minimal waste. In her interview for Energy Portal Magazine, Adrienn reveals her research journey from kombucha to SCOBY and what she learned along the way.

EP ***How did you come up with the idea to make SCOBY?***

Adrienn Újházi Every summer I spent at least 2 to 3 months with my grandparents in the countryside. For most of that time, I was surrounded by plants and animals that became the main inspiration for my creation in the field of visual art.

I wanted to use as few synthetic materials as possible in my work and produce as little waste as possible. That's how I came across the kombucha drink. This drink was mostly consumed in the second half of the 20th century, and in almost every house, there were several bottles of this liquid with the SCOBY culture. My further research into this material officially began when I made the first round of this drink.

EP ***Could you describe how is this material made and its use?***

Adrienn Újházi Kombucha is obtained through fermentation, usually of black or green tea. During this process, microorganisms are activated, and a bio-film is created on the liquid's surface, resulting in the SCOBY material, an acronym that actually means 'symbiotic culture of bacteria and yeast'. Another name for this material is bacterial cellulose. The material can be treated in a number of ways – dyed with different pigments, dehydrated and transformed into a fixed state, as well as mixed with other, different natural materials.

The goal of this process and research is to find suitable biodegradable resources, like SCOBY. The choice of material is correct if, through a natural process and with the help of bacteria, the mushroom becomes degradable, i.e. after a certain time, it starts to decompose. This kind of processed material can be used for different purposes. One example of its potential global application is the alternative to "vegan leather", which is made exclusively from plant

ADRIENN ÚJHÁZI was born in Novi Sad in 1995, where she completed her undergraduate studies in 2018 and her Master's studies in 2020 at the Academy of Arts in Novi Sad, Department of Fine Arts, study group – Painting. From 2020 to 2021, she worked as a professor at the Bogdan Šuput High School of Design in Novi Sad. Since 2021, she has been an independent artist. Adrienn is the recipient of several scholarships and awards, actively participates in exhibitions, projects and collaborative initiatives, and her work has been staged in numerous museums, galleries and festivals worldwide.

and organic materials. The material can be used in different spheres of design such as packaging and interior design.

EP ***How do you plan to present it to the general public?***

Adrienn Újházi The material has been presented in different forms so far. I started to promote it through my artistic practice and present its character in different media. It mainly includes two-dimensional works in smaller and larger formats, photo and video documentation, audio, light boxes, prototypes like bio hats and smaller experimental pieces in Petri dishes, ready-made objects and more.

Opportunities for promotion were mainly at cultural events and other types of events in Serbia and abroad. These were mostly activities that were realized in cooperation with non-governmental organizations, institutions, curators and artists in the form of individual or group exhibitions, biennials, art fairs, open discussions, panel discussions, lectures and workshops.

EP ***Do you expect this material to be widely used in the future?***

Adrienn Újházi Disseminating information and education is necessary for people to understand the benefits of such materials. We are currently working on it, and we have noticed that there is, albeit a small, circle of interested people who are ready to explore. That is why I believe that the SCOBY material has the potential for widespread use. At the same time, more experts, time and resources are needed to achieve this goal. I am very grateful that, thanks to the cooperation with my friends and colleagues, I can implement the first project based on promoting sustainable materials like SCOBY. The project is called BIOFABRIKA and was implemented through the ReAktor Citizens' Association and is supported by the European Capital of Culture – Novi Sad 2022 Foundation.

EP ***How important is environmental protection, in your opinion? How much do young people know about it and how can we educate them more?***

Adrienn Újházi Today, environmental protection is not an option, but something that we should apply every day, at least with minimal steps. Changing the lifestyle that most people have is not an easy task. Young people are much more flexible and ready for change. Still, we should not exclude mature people who are important in terms of support, but also in raising and educating future generations.

EP ***What plans do you have for the future and are you working on another project that focuses on environmental protection?***

Adrienn Újházi The last activity related to the BIOFABRIKA project was the screening of a documentary film on September 22nd, at the Eđšeg Cultural Station. The audience had the opportunity to see the premiere of a short film that summarizes all the activities of our nine-month work on the project.

Interviewed by: Milica Radičević

Photographs: (top) Art Brussels 2022; (middle) Biofabrika

DOMESTIC COMPANY'S INNOVATIVE SOLUTIONS FOR THE PREVENTION AND EXTINGUISHING OF FIRES AT LANDFILLS

In the summer months, the entire region, and a good part of Southeastern Europe, are exposed to the constant threat of open fires. They have a devastating effect, but they are not the only threat during the summer heat. Fires at local landfills pose a huge risk to the health of people and all living things in the environment. One of the biggest fires at the local landfill happened in August 2021 in Vinča. The smoke cloud from the landfill covered Belgrade for almost three days. That summer, landfills in Valjevo, Kovin, and Niš, as well as several landfills in Montenegro and throughout the region, were burning. According to statistics, around 200 fires break out in landfills and open spaces every year in the south of Serbia.

Combustion products of municipal waste are very toxic. Depending on the composition and structure of the waste, as well as the amount of fuel and the wind direction, they can, to a certain extent, affect the health of the population that is kilometres away from the fire site, even up to a distance of 20km. Given that most of the landfills in Serbia and the region are near large towns, it is clear that the direct harmful effects of accidents at landfills on the health of the population are extremely large.

"It's like having an outdoor waste incinerator that has no filters, so all toxic gases as a product of incomplete combustion of municipal waste, depending on how the wind blows, are directly released in the direction of the population and businesses. A fire can last for hours or days, even weeks", says engineer Darko Tonić, B.Sc., TEKON's fire diagnostics and extinguishing consultant.

A large number of fires at landfills sometimes burn imperceptibly deep, like smouldering or underground fires. They are difficult to spot, but when they surface, they are very difficult to contain and cause great problems for fire departments.

"We have all witnessed that the fire at the landfill in Vinča has been lasting for years, maybe even decades and that the fire brigades are often powerless since extinguishing with water and foam does not give good results. Sometimes it seems that applying water to the mass of burning waste causes additional fracturing of the body of the landfill, which creates new fire zones," explains Mr Tonić.

The outbreak of landfill fires is one of the most serious risks that landfills are exposed to during their lifetime. Landfill fires can seriously damage the existing landfill infrastructure and can threaten the lives and health of landfill employees and the population in the immediate vicinity.

Depending on the type of landfill and the type of fire, landfill fires present unique challenges for the industry and fire services. Therefore, special attention must be

The outbreak of landfill fires is one of the most serious risks that landfills are exposed to during their lifetime

paid to the types of fires at landfills, their characteristics and their causes. For a landfill fire to break out, fuel, a heat source and a sufficient concentration of oxygen should be present.

New fire diagnostics and prevention technologies

Considering the current situation of a large number of landfills in the region, the number of fires and problems faced by local authorities, as well as those who manage waste at landfills, the conclusion was that it was necessary to work on projects that would alleviate and completely eliminate these problems.

The TEKON Company implements new technologies for diagnosing the state of landfills for preliminary identification of possible problems and fire prevention, which include precise measurements such as:

- the thermal measurement from the air
- measuring the concentration of landfill and flue gases
- measuring temperature in and on the landfill's body

Measuring the landfill's body temperature, deep and on the surface, is a generally accepted method for identifying landfill fires.

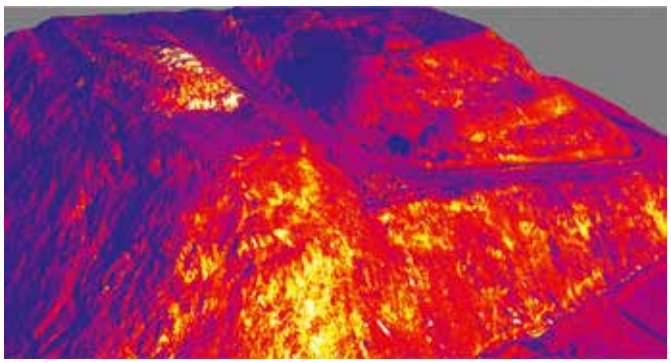
By acquiring the latest equipment that TEKON installs on its industrial drones, as well as all the required software for processing the obtained images, thermal imaging can be carried out at a number of landfills in the region.

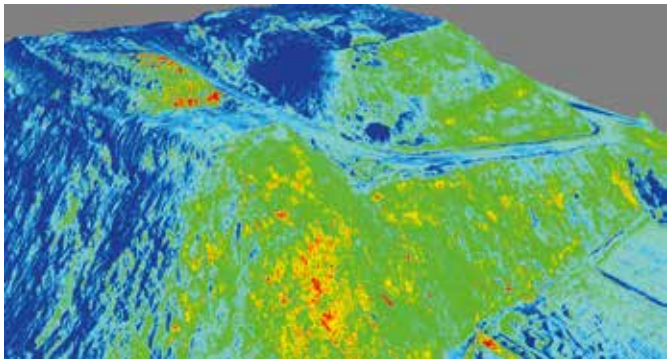
TEKON thus uses a non-contact temperature measurement method that measures the level of infrared radiation, because it has been established that all bodies with a temperature above absolute zero (-273.15°C) emit infrared radiation, even ice. Thermal imaging cameras are specially adapted to "see" that part of the infrared spectrum that is visible to the human eye, which is why they are also called infrared cameras.

How do those cameras work?

The infrared camera, which is mounted on the drone, contains an optical system that focuses infrared energy on a special detector chip (an array of sensors) containing thousands of detector pixels arranged in a grid. Each sensor pixel reacts to infrared energy and produces an electronic signal. The camera's processor takes the signal from each pixel and applies a mathematical calculation to create a colour map of the objects' apparent temperature. Each temperature value is assigned a different colour. The obtained colour matrix is sent to the

Photograph: Pixabay





memory and the camera screen as a temperature image (thermal image) of that object.

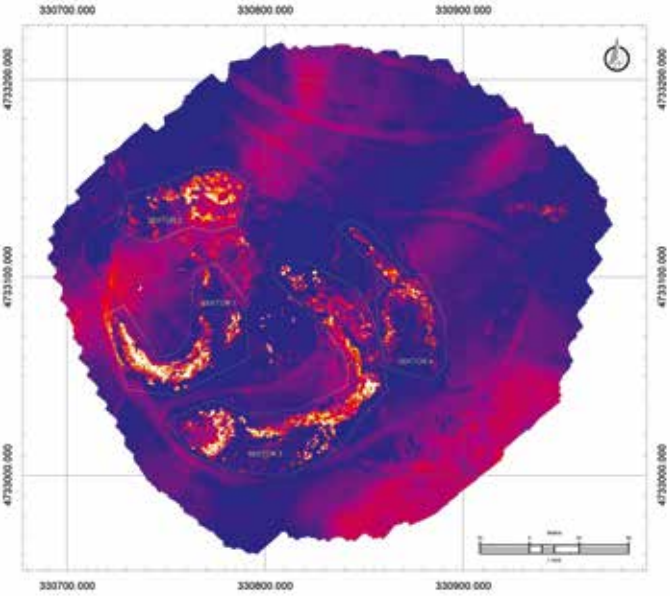
Many infrared cameras also include a visible spectrum camera that automatically captures a standard digital image. Combining these images make it is easier to connect problematic areas on the thermal image with the actual equipment or the area being monitored.

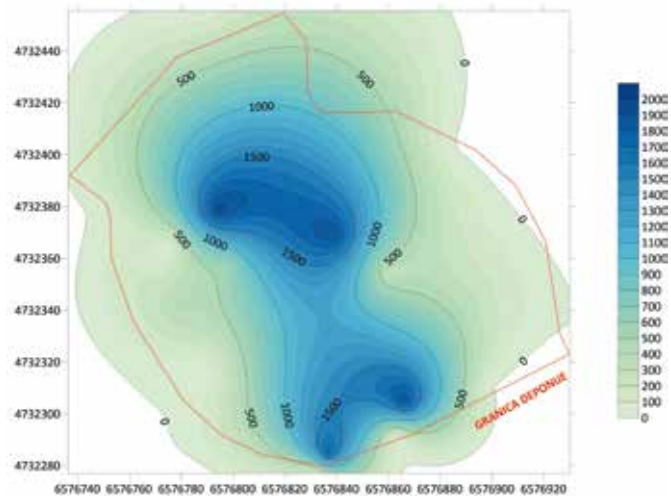
Temperatures up to 50°C indicate that the landfill is operating normally. Temperatures above 50°C are considered elevated and indicate potential hot spots and fire problems. During thermal imaging from the air, the camera records the material in the internal memory, which is later processed. During this type of recording, a large number of thermal images are generated (several thousand per recorded hectare), so appropriate licensed software is a must. The results of non-contact and direct measurements are combined to give a unique temperature picture.

Examination of landfill gases in order to identify underground fires

In addition to measuring the temperature at landfills, TEKON measures from the air, without having contact with the landfill, the concentration of certain gases in the emissions of landfill gas, because landfill fires, along with an increase in temperature, also cause a decrease in methane concentrations and an increase in the concentration of carbon dioxide and carbon monoxide, hydrogen and other gases. If the landfill has biothorns, the status in the biothorn action zone can be very precisely determined for each biothorn zone.

Measuring the landfill's body temperature, deep and on the surface, is a generally accepted method for identifying landfill fires





Examining the landfill's body temperature to identify underground fires

The landfill's body temperature is measured at representative points with a thermometer or thermal probe. Jeopardized zones at the landfill are identified on the basis of recorded temperatures, after data processing. The same rules apply to choosing the location where temperatures will be measured and the number of measuring points, as well as direct temperature measurement. If there are correct biothorns in place, gas concentrations are read at several dept-

Photographs: Tekon

ABOUT TEKON

The TEKON Company owns four large industrial drones and several pilots with a license to operate unmanned aerial vehicles in both Serbia and Montenegro. These are geodetic equipment, detectors and sensors of methane and explosive environments, thermal cameras and other equipment for recording and inspecting landfills and industrial facilities. The company has been operating in the waste management segment since 2003.

Along with measuring the landfill's body temperature, TEKON also measures concentrations of CO_2, O_2, CH_4, H_2S, CO and H_2

hs, and if they are not, gas concentrations are measured on the surface, in line with the grid, which is dictated by the landfill's geometry and work safety. The temperature can be measured up to 15m deep in the landfill's body.

New TEKON's solutions for extinguishing landfill fires

Based on its experience in this industry, TEKON has developed its own independent system that greatly facilitates the fight against fires at landfills and increases the efficiency of extinguishing them. This shortens the duration of the emission of toxic gases resulting from burning waste, which protects the population's health.

The system is based on the application of an innovative mineral slurry that is prepared and applied on-site from a mobile unit that is easily transported from site to site as needed.

Prepared by: Milica Radičević

Photograph: Tekon

OUR FUTURE MUST BE GREEN ENERGY

The Energy Week for the Western Balkans conference was held in Montenegro, organized by the British company Invest In Network, with the support of the Montenegrin Investment Agency and the Department for International Trade of the United Kingdom. The conference discussed the potential of clean energy sources in the Western Balkans.

The participants of the first panel were Rigela Gegprifti from the company Statkraft from Albania, Mladen Grgić, Director of the Montenegrin Investment Agency, then Francesco Corbo, Head of the European Bank for Reconstruction and Development (EBRD) and Eric Scotto, President and one of the founders of Akuo. The panel moderator was Artur Lorkowski, Director of the Energy Community Secretariat.

The participants were unanimous in their assessment that there is great potential in the region in the field of renewable energy sources. Mladen Grgić particularly emphasized the importance of the connection between our countries in this area. "It is essential to establish cross-border cooperation because the goal is the same for everyone, and investors see the region as a whole, not as separate states," explained Grgić. However, the insufficiently structured approach of the governments of our countries and the absence of laws and corresponding by-laws represent an obstacle.

Francesco Corbo paid the most attention to the 72 MW wind power plant at Krnovo. It is the first wind park in Montenegro and one of the largest in the region. At the same time, this is the first project of the EBRD after almost 30 years of presence in our region. Eric Scotto mentioned that Montenegro, where the Akuo company implemented this project, was supposed to be the first European country to use 100 per cent renewable energy sources.

During the conference, they talked about the financing of clean energy projects, the transition from feed-in tariffs to the auction system, and financing risks and how to reduce them. The moderator of this panel was Petar Mitrović, partner and lawyer at the Karanović & Partners law firm, while the panelists were Guido Clary from the European Investment Bank (EIB), Mati Piparinen from the Green for Growth Fund (GGF), Duško Krsmanović representing UKEF, Milica Sredanović, Head of infrastructure at Interna-

Photograph: West Balkans Renewables

tional Finance Corporation and Maja Turković, Senior Vice President of SVP Development Europe.

Solar energy, green hydrogen, the hydropower sector, and decarbonization were the topics of discussion on the second day of the conference. Eminent experts from our region in the field of energy and representatives of large European investment funds participated in this panel on costs, opportunities, and challenges in the construction of solar power plants. At a time when there is a major energy crisis and the world is threatened by a serious shortage of electricity, the panel on "Solar energy and batteries for energy storage" attracted a lot of attention from the participants.

Evan Rice, energy storage systems expert at UGT Renewables, reflected in his presentation on energy storage systems and their potential for the future. Dimitris Galanos, a representative of the Sungrow company, spoke about

solving the challenges investors face when building solar power plants in the Balkans. Nemanja Mikać spoke on behalf of the ElevenES company about LFP batteries that will be produced in the factory in Subotica, the first large factory of its kind in Europe. He talked about the advantages of using these batteries, how the process of making them is progressing and that it is necessary for everyone to cooperate when it comes to progress in this field. Fabian Kuhn, a representative of Fichtner, gave a presentation on solar projects and energy storage batteries. He pointed out that more and more energy will require more and more storage space. Till Barmeier spoke on behalf of GIZ about the concept of the prosumer in Serbia. He also mentioned the Law on the Use of Renewable Energy Sources, which was adopted last year. Thanks to the new legislative framework, households and industries can now produce electricity for their own needs and put the excess into the grid.

Miloš Kostić, director of MT-KOMEX, spoke about the future of photovoltaic systems in Serbia. Since he saw a long time ago that the price of electricity would rise year after year, it was clear that he should become energy-independent as soon as possible. In addition to gaining independence from electricity suppliers, using solar energy reduces carbon dioxide emissions and contributes to raising environmental protection awareness. "The future must be green energy", pointed out Kostić and added that the European Union aims to reach 400 GW of solar energy by 2025 and almost 740 GW by 2030.

Prepared by: Milica Radičević

Photographs: (middle) West Balkans Renewables; (bottom left) EP

SYSTEMIC SOLUTIONS FOR A HEALTHY ENVIRONMENT

The large amounts of waste we create affect the emergence and expansion of landfills, which leaves a strong negative impact on the environment. Landfills occupy large areas of land, rubbish is deposited in such places for years, and its composition consists of all types of waste, from municipal and medical to hazardous waste.

Currently, in addition to sporadic recycling places, which number is insufficient, almost all hazardous waste ends up in landfills and illegal dumps, where it decomposes, releasing huge amounts of harmful chemical substances that penetrate the Earth's crust. We talked about waste management, recycling and ways to overcome numerous problems in this area with Tamara Spasenović, regulatory reform associate at NALED.

EP ***What can you tell us about the Increasing the Recycling Rate for Batteries and Light Bulbs project?***

Tamara Spasenović We launched this project to shed light on the problem of these waste streams, while pointing out the shortcomings of the existing legal regulations and, through piloting the system, showing that a separate collection of waste batteries and light bulbs is possible. For this reason, and in addition to the comprehensive analysis of the situation that we carried out and recommendations for improving the legislative framework, we successfully established cooperation with the line institutions in Belgrade and Kragujevac.

The project officially lasts until December of this year. For the next period, along with the continuous collection of batteries and light bulbs, the plan is to carry out an analysis of the collected quantities so that, based on the data, we gain additional recommendations for further solving the issue of hazardous waste flows.

Also, an important aspect of the project is educating both school-age children and adults.

EP ***How are used batteries and light bulbs managed in our country?***

WHAT ARE THE LOCATIONS OF CONTAINERS FOR COLLECTING BATTERIES AND LIGHT BULBS?

In Belgrade, receptacles for collecting batteries and light bulbs have been placed at 13 faculties of the University of Belgrade, as well as on the premises of the Stari Grad municipal authorities. In Kragujevac, they are located on the premises of the public enterprise Gradsko Stambeno Preduzeće and the Town Hall, as well as in seven other locations.

Tamara Spasenović Currently, our country doesn't have an adequate systemic solution for collecting, disposing and recycling of batteries. Only one company operating in the Republic of Serbia collects and stores batteries and then exports them to Germany for treatment. The main reason for the non-existence of a collection network for this waste stream is the lack of state incentives, which would motivate the largest generators of hazardous waste to hand over used batteries to the system operator. With the support of incentives, they can dispose of those quantities and treat them adequately.

Regarding light bulbs, the situation is somewhat better because there are state financial incentives in place, as well as a facility for recycling and processing used light bulbs in the Republic of Serbia. The problem lies in the fact that the recycling centre for light bulbs. However, it is completely equipped with the latest technology, does not have a sufficiently developed collection network, and therefore not enough quantities that it could dispose of and treat (the facility also has the capacity to treat imported waste light bulbs too).

In addition to the lack of incentives, a recycling centre for batteries and an underdeveloped collection network, it is necessary to boost and systematically organize the opening of recycling yards additionally. Plus we need more containers and bins, as well as have stations we can direct people to, who are also interested in this topic. Furthermore, there is a need for continuous campaigning and education, starting from an early age.

EP ***How can we increase the recycling rate in our country?***

Tamara Spasenović To increase the recycling rate in the entire country, we must first analyze the current situation in terms of different types and streams of waste, so that we can identify the key problems for each of them. We have already done this for food waste and hazardous waste streams (batteries and light bulbs, electrical and electronic waste). An initiative to solve the issue of packaging waste will soon be launched. By analyzing the current situation, and through cooperation with experts from the mentioned fields, companies, citizens and, as well as by using previously acquired experiences, we have identified key shortcomings in these areas, based on which we were able to offer proposals for adequate solutions.

Different waste streams carry different problems and require different approaches and solutions, but they all have one common denominator – the lack of a systemic solution. One of the ways to solve the issue of special waste streams to establish a collective operator based on the model that works for packaging, which would be an incomparably less burdensome model for the state, administration-wise. In this way, the rate of fee evasion would be reduced, the administration would be freed from the burden of issuing a large number of decrees, and the relevant inspection would focus on the work of the system operator.

TAMARA SPASENOVIĆ completed her basic studies at the Faculty of Political Sciences of the University of Belgrade, in the Journalism and Communication Department. She is currently attending master's academic studies at the Faculty of Organizational Sciences, majoring in Project Management. After completing her undergraduate studies, she was appointed project coordinator at the Central European Development Forum (CEDEF), where she gained practical project management experience. Tamara joined NALED in 2020, i.e. its Support Unit of the Coordination Commission for Inspection Supervision, which has systematically monitored the implementation of the Action Plan for Inspection Reform. After completing of the project, Tamara moved to the Environmental Protection Unit, where she currently works as a regulatory reform associate. She is engaged in monitoring and implementing the Increasing the Recycling Rate of Batteries and Light Bulbs project.

The recycling centre for light bulbs does not have a sufficiently developed collection network, and therefore not enough quantities that it could dispose of and treat

Photographs: (on the previous page) Pixabay /Michael Tampakakis; (Spasenović) courtesy of Tamara Spasenović; (bottom right) Pixabay/Tom.jpg

To increase the recycling rate in the entire country, we must first analyze the current situation in terms of different types and streams of waste, so that we can identify the key problems for each of them

EP ***What do the Draft Amendments to the Law on Packaging and Packaging Waste bring?***

Tamara Spasenović As part of the accession negotiations Chapter 27, in the segment of packaging waste, Serbia has committed to recycle 49 per cent of glass, 32 per cent of plastic, 60 per cent of paper and 52 per cent of metal by 2025. To achieve these goals, it is necessary to develop the primary selection of waste in parallel, because the assumption is that the share ratio of the packaging waste is such that 60 per cent of waste comes from households, while 40 per cent is commercial waste.

Among other things, the draft amendments to the Law on Packaging and Packaging Waste from last year opened up the topic of implementing a deposit system. Still, many issues, such as the materials that will be encompassed, the territory and system coverage, the way of marking the packaging and the regulatory body that will manage the system, remained unsolved.

The Environmental Protection Alliance, which operates under NALED's auspices, cooperates with the Eunomia Company from Great Britain, one of the leaders in this field. The company has extensive experience in advising the

A NEW APPROACH TO USED BATTERIES

In order to change things, we should first develop a collection network and provide the required incentives for collecting and recycling batteries. Also, early education on the subject and a systemic solution concerning the places where people can responsibly deal with these dangerous waste streams are necessary, because one cannot do without the other. Last, but not least, we need to open more recycling yards and sanitary landfills, as stipulated in the 2030 Programme.

Photographs: (top) Pixabay/Talpa; (bptopm right) Pixabay/Андрей Баклан

European Commission on packaging waste management and the circular economy and has drafted two studies that show how to improve the existing packaging management system and whether it is necessary to implement a deposit system as well, in response to the challenge of collecting and recycling this type of waste.

EDUCATION

In cooperation with MENSA, NALED has held several workshops for elementary school children. The topic of recycling batteries and light bulbs and its importance was presented to the children in a creative and interesting way. Several more children's workshops will be held in the coming period.

Different waste streams carry different problems and require different approaches and solutions, but they all have one common denominator – the lack of a systemic solution

EP ***What can you tell us about the Glass Packaging Management in the Western Balkans project?***

Tamara Spasenović NALED has launched the Glass Packaging Management in the Western Balkans project, which is implemented under the auspices of the DeveloPPP Programme funded by the German Federal Ministry for Economic Cooperation and Development through the German Agency for International Cooperation (GIZ), to improve the rate of collection and recycling of glass packaging, creating regulatory solutions and raising people's awareness of the importance of recycling.

The changes that the project brought about, which we hope will continue in the future, directly concern potential proposals for changes to the regulatory framework in each of the countries participating in the project, the development of a business model for glass recycling infrastructure and the piloting of the model in selected municipalities for which containers for collecting glass have been purchased. The project also entails disseminating of this model to municipalities that have not been piloted, as well as an intensive awareness-raising campaign, which must be accompanied by an adequate infrastructure for glass recycling and efficient waste collection and separation management.

Interviewed by: Milica Radičević

Photographs: (bottom left) NALED; (top right) Pexels/Cottonbro

GIVING OLD TOYS A NEW LIFE

The fight against plastic, one of the biggest environmental scourges of modern times, has taken on a variety of creative forms. While small businesses in the recycling sector are booming, and schools and other public institutions are increasingly collecting plastic waste, in the studio of one of our artists, unique works of art are created from plastic

Ivan Kocić graduated from the Faculty of Applied Arts in Belgrade, and for years he has been exploring the nuances of his artistic expression in numerous painting techniques and styles. However, today he is best known for his assemblages in which he illustrates female portraits using colorful plastic toys.

"I got the idea seven years ago while working on a larger classic mosaic. I thought it would be interesting to play with a mosaic using different materials instead of the usual stone, glass paste or ceramic. So, the choice fell on used toys that were brightly colored, which made the work easier, and of different shapes and sizes, which at the same time made it difficult to create portraits," says Kocić and adds that from the beginning, his idea was to emphasize recycling in order to give his work a special social note.

"Today, after several years of work on the series I called 'Recycling of play', it is obvious that the audience has accepted these ideas. Even the audience has become a part of this artistic action, considering that among them, I have a strong base of those who are happy to collect and donate old toys," explains the artist.

Until now, Ivan has exhibited several times in Belgrade, as well as throughout Serbia and the region. Some works have traveled to distant gallery destinations, even to Mexico. The audience's reactions are very positive, and the portraits leave no one indifferent.

"I think my works even inspire people to express their artistic ideas through some forms of recycling. That is one of the ideas woven into my works," explains Kocić.

The youngest are the most active audience

Our interlocutor actively runs workshops for children that give the youngest a unique opportunity to transform their old toys into something new. Kocić explains that children are the most active audience; they are honest and straightforward in their question but also in their reactions to Ivan's work.

"Little ones like to touch, to get close. After a short initial shyness, they relax easily because the toys are familiar and close to them as objects. In this way, they become interested and learn about recycling and contemporary art, represented by the portraits. From time to time, in addition to exhibiting works, I also organize workshops where everyone is welcome – from age 7 to age 77. Then, on a practical example, you can see the creation of an assemblage," Kocić points out.

When it comes to collecting art materials, all old toys are acceptable. Ivan gets them exclusively through donations from children and parents, so they become collaborators in creating works of art.

"Most toys have a part missing. The consequences of their use, such as scratches and deformations, are visible. Quite often, I get new, unwrapped toys, and I give them to some less fortunate children who don't have so many toys. In any case, the idea is to make assemblages from used objects, so I follow that idea," adds our interlocutor.

When asked if he will remain consistent with female portraits in the future or if he intends to introduce some other themes into his oeuvre, Kocić replies that he is faithful to the basic theme However, here and there, a male portrait also pops up.

"The portrait has been inspiring me for a long time, and honestly, I still don't see what could surpass and replace it. Of course, over the years, I also worked on some other topics, but exclusively when I took commissions. A portrait is a universal sign, and it easily fits into the interior. For the artist, it always represents a challenge both in terms of surface and form, as well as in the effort to portray someone's character as faithfully as possible. The novelty in my work is the light that, through neon technology, gives the new works a different dimension that is difficult to explain in words. However, this is best experienced at my exhibition firsthand," says Kocić.

Several of this artist's works have already traveled to a gallery in Europe, and Ivan hopes that the other assemblages will also get a chance in front of a foreign audience. In this way, plastic conquers the world again, but this time in an ecological, creative, and cheerful spirit.

In addition to complementing and cheering up any space in which they are found, Ivan's unique assemblages represent an effective form of combating plastic pollution and, in a sense, prove that art also has a role in protecting the environment.

Prepared by: Milena Maglovski

Photographs: Ivan Kocić

AN INNOVATIVE SOLUTION FOR A WEED-FREE LIFE

For some, the first days of July bring the long-awaited signal to start getting ready for the annual vacation, while others are heralding the fight against ragweed pollen. This annual weed produces pollen from early July until the first frost. One stalk of ragweed produces millions of pollen grains and tens of thousands of seeds, which cause a lot of problems for humans.

Almost all of us know at least one person who is allergic to ragweed. People who strongly react to ragweed pollen often complain of a compromised quality of life caused by the allergy in the summer months. Thanks to Professor Miloš Stanković, PhD, a scientist and inventor, they could soon forget about their troubles and start breathing without hindrance. He invented the Ambrozer, a device that uses radio frequency and electricity to recognize and destroy this plant at the root.

"My brother has had a problem with ragweed since he was a small child, as have many people from my environment. I wanted to help them, so I started developing the device. Even the famous Nikola Tesla was trying to make an electric device that would destroy weed. Since then, many people have produced various devices, but they needed to meet numerous safety requirements in the EU and the rest of the world. I succeeded in that", explains Dr Stanković, who is an electrical engineer by profession.

The device that destroys ragweed consists of electronic components and electrodes. With the help of a certain frequency and current, the weed is destroyed at the root without the use of chemical compounds and pesticides. In this environmentally friendly way, the weed not only disappears but no longer grows at all during the season.

"By regulating the frequency, weed or a specific part of the plant is destroyed. The frequency used to eliminate weed is adjusted to the specific weed type. During the physical contact between the electrodes (on the device) and the weed that is being treated, biochemical and biophysical processes occurring in the weed, due to which it instantly withers. The device should be used while the weed is small, due to less electricity consumption", explains Dr Stanković.

> The frequency used to eliminate weed is adjusted to the specific weed type

Professor MILOŠ STANKOVIĆ, PhD, has been actively engaged in scientific research and innovation for 20 years, mostly in projects related to environmental protection and energy. He is registered with the Innovative Activities Register of the Republic of Serbia's Ministry of Education, Science and Technological Development. His inventions were awarded at numerous national and international trade fairs. Dr Stanković is the recipient of more than 100 international awards.

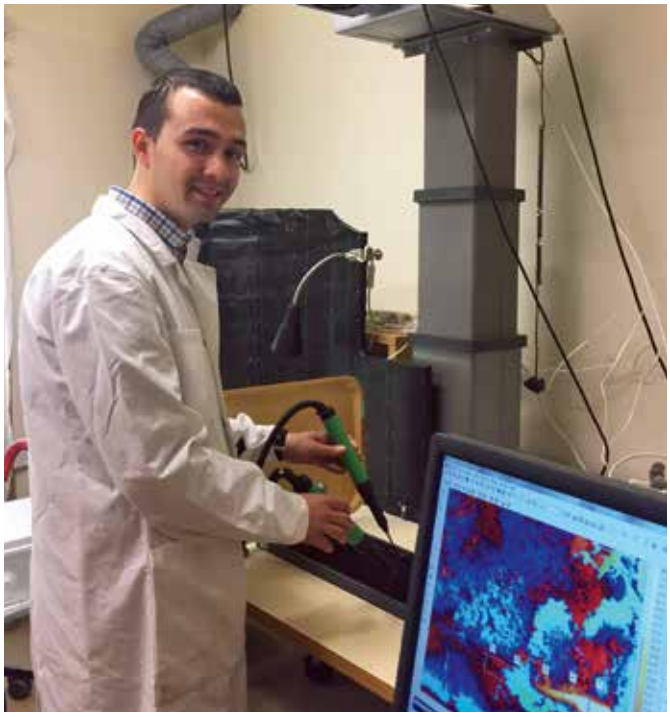
The device can be set to destroy a group of weeds or to be more selective, and according to the inventor, ragweed is the easiest to destroy

During the physical contact between the electrodes and the weed that is being treated, biochemical and biophysical processes occurring in the weed, due to which it instantly withers

The device can be set to destroy a group of weeds or to be more selective. According to the inventor, ragweed is the easiest to destroy. As everything is treated physically and selectively, there is no impact on other agricultural crops, useful plants and microorganisms.

"The device is safe for people due to having good insulation. Numerous experiments and tests have been carried out in previous years, especially this season, on over 100 different types of weeds in Zemun and Novi Beograd. We also carried out tests in Slovenia, Germany, Russia and Sweden, with the Swedish Faculty of Agriculture certifying the device. The device proved to be very effective," Dr Stanković adds.

The testing process for this device is still ongoing, while the plan is to start mass production next year. The professor says that the smaller, hand-held device could be used by people who live in houses, and have gardens and smaller yards, while the larger and stronger one can be placed on tractors, trucks or trains.



He adds that, so far, he has only encountered positive reactions, especially among people allergic to ragweed. In terms of other scientists and inventors, Dr Stanković points out that he has received support from many colleagues, which gives him great motivation for designing new devices.

Prepared by: Milica Radičević

Photographs: (on the previous page) Pixabay/Goran Horvat; (all others) courtesy of Miloš Stanković

ECOMONDO
THE GREEN TECHNOLOGY EXPO

RIMINI (ITALY) 8TH NOVEMBER 2022

AFRICA, THE GREEN TRANSITION GATHERS SPEED

Ecomondo and Key Energy 2022 (Italy) focus on environmental challenges in North African and Sub-Saharan countries.

- **Participation of the European Commission**
- **An exchange of knowledge and opportunities**
- **Africa Green Growth, the forum with African embassies, governments and institutions**

From climate change to recycling materials and the transition from fossil fuels to renewable energies. Environmental challenges and opportunities in North African and sub-Saharan countries will be the focus of part of the debate at Ecomondo and Key Energy 2022 (Italy, Rimini Expo Centre, 8th – 11th November), events organised by IEG – ITALIAN EXHIBITION GROUP, Europe's reference point for ecological and energy transition. "The most comprehensive exhibition in the field of circular and renewable energy, a platform for business and research", says IEG's CEO, Corrado Peraboni, "will, in fact, also become a veritable powerhouse for networking and exchanging opportunities between Europe and Africa."

THE INTERNATIONAL EVENTS

Visitors will be greeted by a solid proposal of global conferences developed by the Ecomondo and Key Energy Technical-Scientific Committees, chaired respectively by Fabio Fava and Gianni Silvestrini, at which the European Commission will also participate. A range of conferences and seminars that will feature international, national and local institutions, public and private companies and the scientific world.

AFRICA GREEN GROWTH, THE FORUM

African embassies, governments and institutions will be meeting at the 2nd edition of "Africa Green Growth": under discussion, growth opportunities in the fields of "Green Hydrogen" and "Water Energy and Food Nexus" with a focus on the circular economy and youth entrepreneurship in Africa's ever-increasing integration into world economy circuits. The event will be organised by RES4Africa and the Ecomondo-Key Energy Scientific Committee with the support of ITA-Italian Trade Agency, the Ministry of Foreign Affairs and International Cooperation and the Ministry of Ecological Transition.

NEW ENERGIES

The transition from fossil carbon will feature in "Transition towards carbon neutrality", an event chaired by the OECD's Bio-, Nano- and Converging Technologies (BNCT) task force, that will deal with the urgent need for a global carbon management strategy for the chemical sector that would endorse the sustainable circular economy approach.

DROUGHT AND ALTERNATIVE WATER SOURCES

Furthermore, the European Commission will attend "Water Projects Europe: Actions needed for water scarcity and drought (focus on Mediterranean)" organised with Water Europe on EU-funded projects regarding water shortage challenges; the afternoon session will be chaired by Francesco Fatone.

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