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# ENERGY PORTAL emagazine

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Dear readers,

It is our pleasure to share with you the news that in October, we are celebrating the tenth birthday of the Energy Portal. We started the business as a small team, which continuously expanded and grew over the years, and simultaneously, the portal. It was then that the values of the site's existence – reliability, credibility, and objectivity – were set, which in their daily work represent a guide for the whole team and a decade after that.

Our *green* thread is the thought of informing you how we can make the planet a better place for all residents to live, working on informative and educational content, increasing awareness of the importance of environmental protection, and encouraging you to participate in various activities that contribute to it. With attractive texts about animals, healthy food, and other content, in addition to information, we also try sometimes to make you laugh and entertain.

Four years after the portal's launch, in 2017, we published the first printed edition of the Energy Portal Magazine. For years, we have been interviewing ambassadors of European countries and around the world who have information about the situation in those countries, as well as relevant ministers in Serbia, mayors of Serbian cities and cities in the region, numerous experts and professors from various fields related to ecology, energy, climate change. We represent the best companies that build solar power plants and contribute to the development of electric cars, the development of infrastructure, networks, and other activities.

The issuer we have prepared for you brings an interview with the ambassador of Kuwait to Serbia, who reveals to us how the leaders of that country considered the state of the planet, which is currently facing the greatest environmental challenges in history, and based on that they prepared a plan and postulates for the country's development until 2035 (New vision of Kuwait).

We learned from the adviser of the Serbian Chamber of Commerce for the circular economy when and how companies should prepare for the new EU regulations for reducing GHG emissions, as well as about the state of the Serbian economy. At the same time, Draško Stanivuković, the mayor of Banja Luka, explained how they are moving towards becoming a green city.

There are also always interesting stories about renewable energy sources and novelties in this area. As always, the People and Challenges section brings you inspiring articles about creative people who try to bring change in a unique way.

Be healthy and environmentally aware; read and follow us in the years ahead.

Nevena Đukić

Nevena Đukić,
editor-in-chief

Photograph: courtesy of Nevena Đukić

# IN THIS ISSUE...



 Photographs: (Stanivuković) City of Banja Luka; (second column) Pexels/Sarah; (third column top) Kuwait Ambasssy (third column middle) Charge&GO

Photographs: (second column top) GoogleEarth; (second column bottom) Hemofarm; (third column) courtesy of Goran Ergić

# THE IMPORTANCE OF NATIONAL ENVIRONMENTAL PROTECTION PLANS

The state of Kuwait, the monarchy nestled on the coast of the Persian Gulf, which borders Iraq and Saudi Arabia, with a population of about 4.5 million, got its name after the Arabic term for a fortress built by the water. The largest industry in this Arab country is oil, which accounts for almost half of the country's GDP. In Kuwait, summers last from April to October, with temperatures above 51 degrees Celsius. Kuwait attaches great importance to investments in environmental protection and implementing plans and measures that mitigate the negative consequences of climate change and allocates significant funds for investments.

We spoke with His Excellency Fayez Mujbel Sulaiman Al-Mutairi, Ambassador of Kuwait to Serbia, about the country's national plan for adapting to the negative consequences of climate change, investments in desalination in the struggle for drinking water, reducing dependence on oil, plans to reach zero gas emissions, cooperation with our country and other topics.

**Q: What are the biggest environmental challenges in the fight against climate change that the state of Kuwait is facing?**

A: Our planet is facing the greatest environmental challenges in its history. The leaders of Kuwait took this into account when they drafted the national plan for the country's development covering the period until 2035 – 'The New Vision of Kuwait'.

Photographs: Ambassy of Kuwait

The greatest common challenge related to progress postulates is accomplishing and preserving sustainable development, which is impossible without investments in environmental protection, and this is a topic we attach great importance to, especially bearing in mind that our country is not spared the environmental challenges that the whole world is also facing

Fayez Mujbel Sulaiman Al-Mutairi
**Ambassador of Kuwait to Serbia**

This plan defines seven long-term development pillars – a sustainable environment, a diversified, sustainable economy, quality health care, efficient state administration, creative human capital, developed infrastructure and a prominent international position. Each of these postulates contains programmes and projects that are strategically important and envisaged to achieve the best possible results in implementing the New Vision of Kuwait, as well as the UN Sustainable Development Goals, which Kuwait officially adopted in 2015.

The greatest common challenge related to progress postulates is accomplishing and preserving sustainable development, which is impossible without investments in environmental protection, and this is a topic we attach great importance to, especially bearing in mind that our country is not spared the environmental challenges that the whole world is also facing. We can say that Kuwait is even more affected by them due to its geographical position because of which it suffers from a shortage of drinking water and extremely high temperatures, in addition to the risk due to the loss of biodiversity, the expansion of the desert and the rise of the sea level, as a result of climate change.

According to certain indicators, in the coming decades, the area of Kuwait could decrease from 1.4 to 3 per cent. Bearing in mind these data, we have drafted a national plan for adapting to the negative consequences of climate change, which defines the main challenges, such as reducing our economy's dependence, especially the transport, energy and water supply sectors, on fossil fuels, i.e. the diversification of the economy, to reduce dependency from oil and gas, while at the same time, preserving the living standard and the quality of life and ensuring the continuation of socio-economic development by creating an environment conducive to foreign direct investments and creating more jobs. We must bear in mind that Kuwait is one of the developing countries with only one basic source of income – oil.

**Q: The impact of oil on environmental pollution is well documented. How much do you do to raise the environmental awareness of companies and citizens alike? Which institutions regulate the field of environmental protection?**

A: Raising awareness about environmental protection plays a significant role in implementing the measures foreseen by the development plan, as well as national legislation and international agreements, all to have better environmental protection and fight against climate change. The Public Environment Office (Directorate for Public Relations and Environmental Awareness) is a state institution in Kuwait responsible for instilling awareness in individuals, regardless

of gender and age, about the connection between a clean environment and public health and security. The effort to disseminate good practices related to environmental protection among children is also significant because they are the future. In this sense, numerous campaigns for raising environmental awareness and bolstering environmental protection were carried out by the Public Office at all levels and among different social groups. One of those campaigns aimed to familiarize the public with the Environmental Protection Law, as well as raise awareness about this problem among our citizens and foreign ones. Numerous activities were carried out in the media, shopping centers, on social media and at exhibitions and conferences.

**Q: You also suffered significant damage from the burning of numerous oil fields during the Gulf War. How much and what did you invest in air purification and ecosystem protection systems after that?**

## REMOVAL OF THE LARGEST TIRE LANDFILL

In August 2021, after 17 years, Kuwait launched a project for the removal and exploitation of one of the largest graveyards of used car tires in the world, which spanned one million square metres in the Arkhi area and contained more than 42 million tires. His Excellency says that the landfill posed a great danger to the environment because it was located at a distance of only seven kilometers from residential areas, with three large fires breaking out there from 2012 to 2020. “The project designed to solve this problem contains a plan to turn the landfill into a residential area under the auspices of the Saad Al Abdullah city development project with the view of simultaneously eliminating environmental risks and utilizing the location”, says His Excellency Fayez Mujbel Sulaiman Al-Mutairi.

A: The events you mentioned and the consequences of climate change that we felt on our skin helped Kuwait to understand how important it is to put the preservation of the environment, which includes quality air and the protection of the ecosystem, at the top of the priorities when developing, financing and implementing new projects in oil and energy industry, as well as in other industrial and development activities. Kuwait has conducted field research and established fixed stations that measure and monitor air pollution, mobile laboratories that can respond to emergencies and air quality monitoring stations near oil fields. Furthermore, our government has started implementing projects under the Clean Development Mechanism to reduce greenhouse gas emissions and train national technical teams to effectively detect and assess air pollutants and implement the required measures.

**Q: What environmental projects does one of the largest oil refineries in the world, Al Zour, implement?**

A: The latest techniques and technologies were applied in constructing the new Al Zour oil refinery to ensure the smallest possible air pollution and reduction of other harmful environmental effects. The refinery has the largest plant in the world for the desulfurization of oil left over from the desalination process with the help of a diesel hydrotreating unit that removes waxy substances to obtain high-quality, low-sulfur diesel that is aligned with European specifications. Al Zour has more than one highly efficient desulfurization unit designed to ensure stable producti-

on and an appropriate level of environmental protection. There are also permanent systems for monitoring emissions and ambient air quality, as well as burners that do not emit smoke and operate with minimal noise.

As for ecosystems, the negative impacts of climate change and human activities on ecosystems can be seen in soil erosion, the disappearance of plants and the destruction of wild animal habitats. To respond to this problem, Kuwait has developed a national strategy for conserving natural biological diversity in artificial and agricultural ecosystems. Likewise, two marine protectorates were established, and the National Plan for the Management of Marine Ecosystems was adopted, which defines priorities in this area and compliance with national, regional, and international legal provisions.

**Q: Given that Kuwait is a desert area, most of the drinking water must be obtained through desalination. How did you come up with solutions that can provide sufficient quantities of drinking water?**

A: Unlike Serbia, which is abundant in drinking water sources, Kuwait obtains most of its drinking water through seawater desalination (93 per cent), during which a large amount of energy from fossil fuels is consumed. The rest is obtained by pumping groundwater, which is not renewable as we have rather low precipitation. That is why Kuwait is trying to switch to more energy-efficient ways to obtain drinking water through programmes for the development of water resources, the construction of desalination stations, which use the reverse osmosis principle, the use of purified wastewater and the partial abolition of state subsidies on the price of water to encourage more rational and efficient use and conservation of water. Water desalination projects using renewable energy and the extraction of economically profitable substances from salt water are strategically

The Al Zour refinery has more than one highly efficient desulfurization unit designed to ensure stable production and an appropriate level of environmental protection

significant, as they lower the dependence on oil and extend its availability for future generations, reduce carbon dioxide emissions, and support environmental sustainability.

**Q: Does the New Kuwait national plan, which defines goals for Kuwait to become a regional, financial and cultural centre by 2035, include investments in improving the environment? What are the basic principles for improvement in this area?**

A: Building a sustainable environment is one of the main pillars of Kuwait's development plan, which covers the period until 2035. It includes numerous projects to improve air quality, rationalize the use of drinking water, develop desalination technology that uses renewable energy, treat and recycle wastewater, develop and rehabilitate landfills in different areas, and build more sustainable residential neighborhoods and infrastructure. The most important postulates for achieving progress in this area are embodied in the precise determination of environmental risks, directing efforts, allocating financial resources and reaching a consensus on the necessity of mitigating these risks as much as possible through new development projects in all areas related to sustainable development, including the economy.

**Q: You have gigantic architectural projects – Al Hamra Tower, Burj Khalifa and the construction of Burj Mubarak, which is about 1,000 meters high. These facilities have the highest global GSAS green building and infrastructure rating system, which is used on buildings with exceptional ability to improve energy performance. How did you reach this level of sustainable construction?**

A: The geographical area in which Kuwait is located has a harsh climate, and the country's development in the previous decades was based on exploiting oil and gas. In these circumstances, we realized that achieving the highest level of quality in the construction industry is necessary to contribute to environmental protection and achieve sustainable development, especially in the shadow of the increasingly worse consequences of climate change in recent years.

**Q: What steps does Kuwait still need to take to reach the goal of zero emissions of harmful gases by 2050?**

A: Despite the many challenges and obstacles it faces in its effort to transition from an economy based on the production and export of fossil fuels to a sustainable economy based on renewable energy sources, Kuwait remains committed to international obligations in this area, including reducing emissions of carbon dioxide with the help of the National Strategy for Reducing Emissions until 2050 and National Plan for Chemical Safety, which fits the Kuwait 2050 vision.

**Q: The Serbia-Kuwait bilateral cooperation was established 60 years ago, and this year is a jubilee year. How can we further improve relations between the two countries, and how could companies from Serbia be more present in the Kuwaiti market?**

A: This year, Kuwait and Serbia are celebrating 60 years of diplomatic relations between our two friendly countries, and on this occasion, we should review all forms of existing cooperation and the opportunities for bolstering these relations, especially in the economic sphere, bearing in mind that the two countries strive to increase their mutual trade. In this sense, we should highlight the opportunities for Serbian companies and organizations to participate in implementing the ambitious plan for the development of Kuwait until 2035 and the projects it envisages. Furthermore, the State of Kuwait is interested in increasing its direct investments in Serbia, especially in areas of strategic importance such as energy efficiency and renewable energy sources.

Interviewed by: Mirjana Vujadinović Tomevski

# GREEN CITY DEVELOPMENT – A NEW APPROACH TO URBAN PLANNING AND SAVINGS

The City of Banja Luka's Development Strategy stipulates priority activities that reflect the local government's aspirations to make Banja Luka an ecologically sustainable, communally well-equipped, energy-efficient and safe environment, i.e. for Banja Luka to transform into a Green City. This concept implies creating more urban green areas, parks, and recreational zones, regulating the banks of the Vrbas River and its tributaries and managing natural resources responsibly and creatively. The Strategy's draft also considers aesthetic and functional aspects, focusing on environmental protection. The local government is investing a lot of effort into creating inspiring, top-quality amenities in public spaces to enable better interaction, engagement, and health care for residents. In other words, making residents feel as good as possible in the environment they live in, says Draško Stanivuković, mayor of Banja Luka.



Photographs: (top) Saša Knežić; (bottom) City of Banja Luka

By replacing all lighting fixtures with more energy-efficient ones, electricity consumption could be reduced by more than 65 per cent, and total costs would be reduced by around 500,000 euros

"Accomplishing all the goals outlined in the green city concept would contribute to its better-integrated development, better quality of communal services, energy savings and more attractive appearance. Banja Luka's goal is to be a good example of a town with an innovative, smart, and sustainable utility and traffic infrastructure supported by an efficient land use system and increased resistance to climate change and other natural disasters. With a healthy and dynamic environment, the green and blue infrastructure network will protect and improve water resources, soil quality and biodiversity, but also maintain Banja Luka's reputation as a green city."

**Q: What are the most favorable models for financing projects aimed at boosting energy efficiency? How much did you invest in such projects, and what results have you accomplished?**

A: Banja Luka aspires to be an energy efficiency leader in Bosnia and Herzegovina and in the application of modern financing models. We launched several projects in this area and invested significant funds. Among the more significant projects is the public lighting managing and monitoring system, which has been implemented at more than 480 measuring points. In several stages, about 5,000 old light fixtures were replaced with LED ones, with a total value of about 563,000 euros (1,100,000 KM) and the project was implemented in cooperation with the UNDP. The city government will continue carrying out activities on the modernization of the public lighting system to reduce electricity consumption. Considering that there are about 30,000 light fixtures in Banja Luka, of which about 25,000 are old, that use high-pressure sodium, metal-halide, and mercury sources, with these new state-of-the-art LED ones, we will manage to reduce energy consumption and the emission of harmful gases. But first, we need to carry out energy-saving renovation, which includes the renovation of the infrastructure and the replacement of more energy-efficient lamps, as well as the application of light intensity regulation measures, which will achieve significant savings.

Thanks to the existing system, the city authorities allocate about 1,250,000 euros annually to maintain

**DRAŠKO STANIVUKOVIĆ was born on May 21, 1993, in Banja Luka, where he graduated high school and enrolled in the University of Banja Luka's Faculty of Economics. He was elected mayor in the 2020 local elections. In 2014, Mr Stanivuković founded the Budi DRUGačiji Civil Association, which motivates young people and provides assistance through various campaigns. So far, he has organized hundreds of walks and gatherings of residents in various parts of his native Banja Luka and the Republic of Srpska to highlight the problems Banja Luka citizens face. In this way, funds for school yards and gymnasiums were raised, as well as funds for helping people suffering from various diseases. Mr Stanivuković expressed his political and social activism by organizing numerous protests, highlighting the cases of local corruption, and launching many initiatives as an MP.**

Photographs: City of Banja Luka

public lighting and electricity costs. With the increase in the price of electricity, these costs amount to approximately 1,800,000 euros. By replacing all lighting fixtures with more energy-efficient ones, electricity consumption could be reduced by more than 65 per cent, and total costs would be reduced by around 500,000 euros.

Furthermore, with the construction of the Banja Luka eco-heating plant, which uses biomass instead of fuel oil for district heating, we have started drafting the Feasibility Study on the modernization of the district heating system and the implementation of renewable energy sources, which the European Bank is carrying out for Reconstruction and Development (EBRD). We plan to carry out the automation of substations in the district heating system, reconstruct the existing grid, and construct a new one. Individual investment activities will be implemented by the Banja Luka eco-heating plant and then via contracts with investors. Plus, several school and preschool facilities were renovated in the past period, too.

**Q: How much do you invest in boosting the energy efficiency of residential buildings?**

A: Under the auspices of the *Decarbonization in the Housing Sector of Bosnia and Herzegovina* project, which is financed by Sweden and implemented by the United Nations Development Program (UNDP) in partnership with the Banja Luka government, we have started drafting the Energy Efficiency Study of the entire housing sector. The Study's goal is to provide key tools that will enable the development and establishment of efficient and effective policies and financing mechanisms that will promote significant growth in investments in boosting the energy efficiency of the housing sector. The main goal is to develop an energy efficiency study of the entire residential sector in the city, based on a sample of 400 individual houses and 30 residential buildings.

For several years, the city authorities have been co-financing works on rehabilitating the facades of residential buildings, with the expected reduction of energy consumption in the amount of at least 30 per cent. So far, the facades of eight collective housing buildings have been successfully restored, and following a new public

## ESCO FINANCING MODEL

The ESCO financing model was proposed for the renovation and rehabilitation of the public lighting system in the city because the relevant technical & economic analysis showed that substantial savings could be generated in this way. "This model implies that the partner or company with whom we are collaborating on the project invests its funds and technical solutions, thus saving the city government money while completely replacing public lighting. We are ready for such a serious, large-scale project, and we received support from the City Assembly for this project," says Mr Stanivuković. The ESCO financing model has been used for over a decade in developed European and neighboring countries and is incorporated into the Energy Efficiency Law.



Photographs: City of Banja Luka

call for submission of bids, the plan is to restore 12 more buildings in the city. The total value of the investment amounts to slightly over 511,291 euros, of which the city authorities have allocated more than 255,000 euros.

**Q: What priority projects that contribute to enhancing environmental protection have you been implementing?**
A: Banja Luka is one of the leading local self-governments in environmental protection in the Republic of Srpska, according to the auditor general. Following the relevant regulations, we regularly draft all planning documents and implement them in accordance with the available budget. We monitor air pollution and noise. We have an organized waste collection system, which covers as much as 95 per cent of the total city territory (urban and rural parts). Every year, we implement the Clean Face of the City campaign, during which citizens can dispose of bulky waste at the expense of the local authorities. We are especially proud that we have cleaned watercourses of waste and that our citizens are increasingly developing awareness and throwing less waste into riverbeds and streams. The city

We plan to carry out the automation of substations in the district heating system, reconstruct the existing grid, and construct a new one

## NEW CITY PARK

After the International Call for Submission of Solutions for the Development of an Urban and Architectural Solution for Conceptual Landscaping the park stretching along the Serbian Army Boulevard in Banja Luka was launched, we decided on a solution which envisaged the park as a modern multifunctional space for recreation, culture, entertainment and learning. In 2022, the renovation of the abandoned green area began, and the tender for the start of the first phase of construction is currently underway. The works are expected to start in late 2023, and the investment value is around 1.6 million euros.

"The park is intended for various activities and is interactive, but in an unpretentious way that will arouse the feeling of freedom that comes from being in contact with nature. The concept is based on the natural spatial planning and permaculture principle, prioritizing the relationship between people and nature and their synergy and sustainable development, thus creating spaces tailored to people. The sustainable architecture principles will be applied here (e.g. making hillocks from the existing deposited material on the site), rational use of energy, use of environmentally friendly materials and planting of indigenous trees," explains Mr Stanivuković.

The goal is to integrate the park visually and functionally into its surroundings, encourage further city development and transform it into an attractive landmark.

government also supported the Spatial Healing project to prevent the creation of illegal landfills by erecting artistic sculptures and developing green areas instead. Sculptures and ornamental plants were put in several locations in the city area in place of unregulated landfills.

The plan is also to build three recycling facilities in the city area, which aim to reduce the amount of waste deposited at the regional landfill and increase the opportunity for recycling. Recycling is one of the projects we will deal with more in the coming period. Furthermore, thanks to the construction of a large city park, green oases, children's playgrounds, river promenades and outdoor gyms, which are all aesthetic and functional contributions to the city, we are also striving to do what we can to protect and improve the environment and space.

The drafting of the Wastewater and Solid Waste Management Study, financed by the European Investment Bank (EIB), is also underway, and the study should have been completed by May 2024. We are also planning to launch a tender for the rehabilitation and expansion of the regional landfill in Ramići.

**Q: Could you tell us more about important green projects that you have implemented recently? What are your plans for the next period?**

To promote the development of electromobility, chargers are free to use, as the city government bears the costs of the electricity used for these purposes



Photographs: (top) City of Banja Luka; (bottom) Saša Knežić

A: We are especially focusing on the construction of new and renovation of existing parks. Active urban development zones are losing spatial and living qualities. Hence, we recognized the need for new green facilities. This type of intervention and our approach are important factors in maintaining the green city epithet Banja Luka has proudly carried for decades.

In the past period, smaller parks were fixed up in several city locations. Plus, the Mladen Stojanović Park was completely renovated, which now has additional facilities for civil use (playground, fountain, jogging track).

We have also planted tall vegetation in the park.

We are also actively working on landscaping the banks of Vrbas, and in the past period, green oases with accompanying facilities have been created at several locations. The biggest project in this segment is constructing a new city park, spanning about 20 hectares of land. Due to its location in the vicinity of the city centre and the possibility to connect the surrounding area with the Vrbas River bank, we see this as a location with great potential.

**Q: In which way have you been promoting raising the awareness of your residents about boosting environmental protection?**

A: Raising the awareness of our citizens regarding environmental protection is one of our main activities. So far, we have carried out various activities to implement this plan. The Clean Face of the City campaign was designed so that fellow citizens can participate in cleaning the city and making it even more beautiful with the aim of raising awareness of the importance of environmental protection. By promoting this campaign, the city authorities have actively worked on involving more local community councils, housing associations, kindergartens and schools in the campaign because our youngest generations must learn and develop awareness of environmental protection from an early age.

The city administration previously held educational workshops for the youngest residents and produced brochures and promotional materials which contained information about energy efficiency regulations and tips for saving energy and increasing energy efficiency in households. Electronic versions of brochures and coloring books, as well as information related to energy efficiency projects that the city implements or in some way, participates in, are available on the website www.banjaluka.rs.ba, in the energy efficiency section. Information on air pollution is also published on the website.

**Q: How fast is electromobility developing in Banja Luka? Do you have charging stations? Does the local government use electric cars?**

A: Six chargers for electric cars are available to residents of Banja Luka and visitors. To promote the development of electromobility, chargers are free to use, as the city government bears the costs of the electricity used for these purposes. Although Banja Luka does not yet have electric cars, the city administration is actively working to change the traffic culture in the city. Several activities have been carried out to develop sustainable urban mobility to reduce the use of cars so that citizens opt for alternative transportation modes. In this regard, we are implementing a project to give Banja Luka a new integrated traffic concept in the city centre. We are also actively working on improving the cycling infrastructure. We have also introduced electric scooters, and we will soon have public electric bicycles available.

Interviewed by: Mirjana Vujadinović Tomevski

Photograph: Ciity of Banja Luka


# OVERVIEW OF THE SITUATION IN SERBIA REGARDING THE TRANSITION TO A CIRCULAR ECONOMY

Numerous analyses of various social aspects point to the fact that the coming decades will bring us an increase in the demand for resources. Considering the exploitation of natural resources that are not unlimited, the need for a different approach becomes a prerequisite for the sustainable survival of the planet and its inhabitants. Data show that in the next 40 years, the global consumption of materials such as biomass, fossil fuels, minerals, and metals could double. By increasing their use, waste also grows due to this approach. It is also predicted that the quantity of generated waste could increase by 70 per cent by 2050.

The human relationship with the environment, in general, is reduced to collecting benefits from it, not considering the needs of other inhabitants of the planet today and even less providing a future perspective.

## A prerequisite for a sustainable future

During the life of the human species so far, the attitude towards what nature offers has been reduced to the principle of take-use-throw away. Although early civilizations did not contribute to the degradation of the environment in the way that humans do today, they laid the foundation for the treatment humans have been using in recent centuries. It is the so-called linear economic model, which needs to be eliminated if we want to make life on the planet sustainable for future generations.

The law of nature says that everything is connected, pointing to the fact that the problem of excessive consumption of resources does not only mean their depletion. Closely related problems are the world, which has seen the degradation of biodiversity and acceleration of climate changes,



Photograph: Pixabay

poverty, hunger, injustice, unrest among people and others. Considering the aforementioned, the Sustainable Development Goals of the 2030 Agenda were adopted at the UN summit in September 2015 and officially into force on January 1, 2016. Seventeen goals are interconnected in a cause-and-effect relationship.

Although none of the goals specifically refers to the circular economy, its essence is particularly incorporated into goal 12 – responsible consumption and production. This goal promotes the need for sustainable and efficient use of natural resources, proper management of chemicals, significant reduction of waste generation and its processing and sustainable public procurement.

In addition to this goal, six more should be highlighted that are also directly related to the implementation of the circular economy – goal 7 – affordable and renewable energy; goal 8 – decent work and economic growth; goal 11 – sustainable cities and communities; goal 13 – climate action; goal 14 – life below water; and goal 15 – life on land.

As a new economic model that should replace the linear one, the circular economy rests on the principle of maximum reuse of materials from products at the end of their life cycle, with as little use of new resources as possible, as the main source of economic growth. This model strives to recover all waste material in the process of new production as soon as resources are used sustainably and efficiently, reduces the negative impact on the environment, also generates financial savings and new business opportunities – waste from one industry becomes raw material for another, i.e. waste does not exist.

As a new economic model that should replace the linear one, the circular economy rests on the principle of maximum reuse of materials from products at the end of their life cycle, with as little use of new resources as possible, as the main source of economic growth

The circular economy views products differently, taking into account how they are designed, how recyclable they are, the way they are produced and what impact they have on nature.

Speaking of the circular economy and our country, the establishment of a strategic framework began in 2019, when an ex-ante analysis of the effects of the circular economy was drafted, which showed that a separate public policy document is needed covering the circular economy.

Following the results of the analysis mentioned above and based on the Republic of Serbia's Planning System, the Ministry of Environmental Protection initiated the development of the Circular Economy Development Programme in Serbia, covering the period from 2022 to 2024. The overall goal of this document is to create a stimulating environment for the development of the circular economy to support the green transition in the Republic of Serbia. To accomplish this overall goal, five individual goals are set, as are measures and activities that will be implemented from 2022 to 2024.

## Individual goals are as follows:

1. supporting the economy in the transformation to a circular business model
2. supporting local governments in creating circular communities
3. improving the waste management system through more efficient use of waste in the circular economy
4. supporting the implementation of green public procurement and voluntary instruments related to environmental protection
5. raising the awareness of the public and educational institutions about the concept of circular economy.

Photograph: Pixabay/aitoff

A SWOT analysis was used in developing this Programme to understand the current situation better and identify further planned activities. Among other things, this analysis determined weaknesses in our country regarding the circular economy. Waste management was identified as the main weak point in the entire system, considering the inadequate application of regulations, the poor condition of communal infrastructure, the small percentage of primary waste selection, the absence of penalties and education of the population and others. Specific problems are listed in more than 30 points and include an underdeveloped circular model of single-use plastic product management and the use of more sustainable materials, low utilization of residues from the production process and inadequate exchange of information about their possible utilization among companies, as well as the lack of an adequate system for the reuse and recycling of non-hazardous construction waste, the lack of suitable waste management operators in the market, the impossibility of delivering waste in small quantities and others.

In addition to the Programme, the Circular Economy Roadmap should be mentioned. It is a document prepared by the Ministry of Environmental Protection with the support of the UNDP project Circular Economy Platform for Sustainable Development in Serbia.

The Circular Economy Roadmap in Serbia is a process that wants to meet, promote and connect recognized actors who can contribute to a faster transition towards the circular economy with their knowledge, innovation and creativity. This document is a guide for the transition to the circular economy model, which, in addition to profit, focuses on environmental protection and resource conservation. Economic, social and environmental dimensions have equal importance in the document.

## INTERESTING FACTS

A third of the food produced for human consumption is discarded as unconsumed surplus, and 50 per cent of municipal waste is biodegradable.

Data from the Environmental Protection Agency (EPA) have proven that paper recycling reduces water pollution by 35 per cent, with 74 per cent less air pollution than primary paper production.

By implementing the circular economy in Serbia, 30,000 new jobs can be created, while the Serbian economy could experience quite a boost.

The circular economy represents the circulation of materials and their reuse, significantly reducing the use of energy and water, in some cases, by over 90 per cent.

Photographs: Unsplash/Vivianne Lemay

The Road Map has preliminarily identified priority sectors in Serbia based on their possibility to apply the concept of circular economy business models in the fastest and most adequate way, as stated in the document, through efficient use of materials, increasing the value of materials in use, mobilizing the implementation of circular economy business models for products and services, promotion of energy efficiency, closing the cycle of material use, prevention of waste management, the use of green public procurement and the development of general circular culture in society. Not forgetting the importance of other sectors when it comes to the transition to the circular economy, the following sectors were chosen as priorities: manufacturing industry, agriculture, and food – surplus food and food waste, plastics & packaging, and construction.

The European Union accession is one of Serbia's main strategic priorities, which is why harmonization with European regulations and standards is necessary. These include the European Green Deal and the new Action Plan for the circular economy, which must be incorporated into the national legislation, both of which are quite demanding. Furthermore, Serbia should align its policies with the 2030 Sustainable Development Agenda and the Paris Agreement.

Prepared by: Katarina Vuinac

Photographs: (top) Pixabay/Yves Bernardi; (middle right) Pixabay/Chaiyan Anuwatmongkolchai

# THE IMPORTANCE OF EDUCATION FOR THE TRANSITION TO CIRCULAR SOLUTIONS

The Chamber of Commerce and Industry of Serbia (CCIS) has carried out numerous activities related to the green transformation of the Serbian economy. First and foremost, the focus is on training and education of company representatives in the areas related to circular economy, carbon accounting, Carbon Border Adjustment Mechanism (CBAM), industrial symbiosis, decarbonization, as well as energy efficiency, industrial waste treatment and green construction. The 10-point Declaration on the Green Transformation of the Serbian Economy – a strategic document whose goal is to encourage and support companies in the process of transitioning to a circular business model while maintaining competitiveness and efficiency – was written exclusively by the Chamber's staff. It is also available online at

### CO2 EMISSION REPORTS WILL BE MANDATORY SOON

Many small manufacturers of iron and steel products are not yet aware that they will be bound by the new, important rule. "When the EU launched the CBAM in late October, hundreds of exporting companies from Serbia in the steel, iron, aluminum, artificial fertilizers, cement, hydrogen and electricity sectors, as well as manufacturers of products made of, for instance, steel, iron and aluminum will be obliged to write quarterly reports on direct and indirect CO2 emissions by January 2024. Those companies have established adequate waste treatment, procured electricity from renewable sources, and increased energy and resource efficiency. There are also innovative solutions that come from the SME sector," said Mr Šelmić.

Education and training on CBAM is a very important issue for the Serbian economy. The Circular Economy Centre's activities are therefore primarily focused on that area. The Centre has created a training and consulting three-level program for companies, which should help companies to successfully deal with not only the challenges related to the CBAM and writing reports but also the comprehensive challenge that is the green transformation, i.e. decarbonization of the production process. For more information, companies should contact the Chamber.



Photograph: Pexels/Macro photography

We are now focused on designing and implementing more advanced and concrete circular economy education programs specific to individual industries, such as construction or food

**RADMAN ŠELMIĆ, PhD is the green and circular economy and digital transformation adviser to the President of the Chamber of Commerce and Industry of Serbia (CCIS). His expertise is primarily in designing and implementing projects that improve green transformation's economic and social ecosystem and cooperation with international organizations and universities. He received his PhD in Political Economy from Goldsmiths, University of London, with part of his academic research and work during a decade he spent in London focused on green economics, particularly green finance. Prior to his current position at the CCIS, he worked at the Lloyds Banking Group Centre for Responsible Business and the Birmingham Business School, University of Birmingham. PhD Šelmić researched sustainable finance with a special focus on financial systems and instruments in green transformation, as well as analyzed alternative economic policies that promote the reduction of poverty and inequality in the world and the relevance of state investment banks. He has published many papers in this area and his adapted PhD thesis is due to be published as a book by Palgrave Macmillan in February 2024.**

https://api.pks.rs/storage/assets/Deklaracija,%20final%203.12.2022.%201.pdf

The first regional Circular Economy of the Western Balkans Summit and visits to companies in Serbia were organized in June to encourage the transition to new business models. Various activities will continue because awareness in companies about the importance and comprehensiveness of changes in this area has increased, but it is still at an insufficient level.

Radman Šelmić, green and circular economy adviser to the President of the Chamber of Commerce and Industry of Serbia (CCIS), spoke with Energy Portal Magazine about the obligations that exporters will have to fulfil come next year, training and

Photographs: (middle) Unsplash/Danist Soh; (Šelmić) courtesy of Radman Šelmić

education in the Chamber of Commerce, various support programs, as well as the best practices from the European Union that we can apply to speed up green transformation.

**Q: For years, the Chamber has been holding training sessions related to circular economy. What area are you focusing on now? What topics are companies most interested in and how many have completed the training?**

A: In the last few years, we have organized training and educational sessions related to the circular economy through various programs. In the beginning, these were general training sessions to familiarize company representatives with the concept of the circular economy, understand the necessity of changing business processes and models and recognize the possibilities for concrete application. We are now focused on designing and implementing more advanced and concrete circular economy education programs specific to individual industries, such as construction or food. Hundreds of company representatives completed the training, and, in this way, we have significantly contributed to the faster implementation of the circular economy in Serbia with the concrete transfer of knowledge. The training changed its format to fit companies' needs and the market's digitalization. Regardless of the format, the participants learned about using circular economy tools (waste management, eco-design, product life cycle, recycling, domestic and EU legislation, etc.) over several weeks of training. Special training sessions are now being held for all these areas.

**Q: Could you rate the dynamics of applying new knowledge related to the circular economy in practice and how it can be improved? What have companies proposed to improve the transformation of the green transition in the coming period?**

A: In the last year, there has been a noticeable shift in the ever-growing

## THE CIRCULAR ECONOMY PLATFORM IMPROVED

The CCIS has been trying to digitize as many processes as possible regarding the green transformation and direct them to the circular economy platform https://circula-reconomy-serbia.com/ which the Chamber has significantly improved.

"For the first time in Serbia, the platform provides companies with an opportunity to carry out industrial symbiosis, i.e. for a certain company to find its resource in something that is another company's industrial waste that is numerically marked and geographically defined," added Mr Šelmić.



Photographs: (bottom) Pexels/Ready Made; (top) Unsplash/Alexander Schimmeck

status of waste, which is a necessary prerequisite for industrial symbiosis between the two companies, and the third is difficult access to bank funding for investments or insufficient subsidies. The fourth is the constricted knowledge of domestic experts in this area.

**Q: What are the plans of the Chamber's Circular Economy Centre to prepare the Serbian economy for a comprehensive green transition?**

A: We want our circular economy platform to be a central hub for industrial symbiosis in Serbia. Thanks to a pilot project, we have already listed all types of industrial waste in the Pirot industrial zone, under the auspices of cooperation with the Ministry of Economy. This is an important first step.

awareness of companies about the importance and necessity of implementing concrete solutions in this domain.

However, this is still far from satisfactory. We could group the most significant challenges into four segments: the first is insufficient technological and economic knowledge in companies that could accelerate the transition to circular solutions, the second is legal regulations that do not favor the status of by-products in specific industries and ending the

We are planning soon to implement the next stages of education for specific industries in the domain of the circular economy, as well as for areas such as carbon accounting, energy efficiency, decarbonization of business processes and others. Together with our colleagues from the Chamber's Green Team, we are planning to visit the regional chambers and in direct contact with companies, convey messages about the necessity and importance of the circular economy.

Photographs: (middle) Pexels/Ellie Burgin; (bottom) Pexels/Aleksandar Pasaric

Circularity's essence is the circulation of raw materials, whether they are defined as by-products or as the end-of-waste status

**Q: Could you tell us about the implementation of a three-year support program for the development of the circular economy, which was launched in cooperation with the Ministry of Economy of Serbia? What is the CCIS' role in this?**

A: The Circular Economy Development Support Programme (2021–2023) is part of the Action Plan for the implementation of the Industrial Policy Strategy of the Republic of Serbia from 2021 to 2030, in which the CCIS is listed as an implementation unit of the Ministry of Economy. The Strategy's overall goal is to boost the competitiveness of the Serbian industry. Five specific goals should be accomplished in six intervention areas – human resources empowerment, digitalization, innovation, investments, international dimension and circular economy. The concrete measure titled 'Promoting the Circular Economy and Educating Business Entities' is entrusted to the CCIS.

**Q: What activities are envisaged in the program and how much should the program contribute to expediting the development of the circular economy?**

A: The program was implemented at the right and very delicate time due to the COVID-19 pandemic. The uncertainty related to the COVID-19 pandemic put the green transformation in stand-by mode, yet we, who operate in that segment, knew that the transition would not stop. On the contrary, as soon as the pandemic subsided and in parallel with the global energy and economic crisis, issues stemming from the green agenda gained momentum in the EU and the USA.

The initial goal of the activities carried out by the Chamber was to define the position of the term *circular economy* in Serbia and present the circular economy tools to as many businesses as possible. The initial position was that 60 per cent of the respondents identified the circular economy as recycling, which practically meant that we were starting from a very modest amount of general knowledge and information because recycling is the last stop of the circular economy if we exclude the waste-to-energy processes (energy consumption) from circularity. We have successfully implemented training sessions covering general knowledge about circular economy tools, non-financial accounting, by-products and end-of-waste status, wastewater management and the CBAM. We have published guides on circularity in agriculture, concrete waste management and reuse, chemical management in the circular economy, etc. Our focus in the last year has been on industrial symbiosis. Circularity's essence is the

circulation of raw materials, whether they are defined as by-products or as the end-of-waste status. We have expedited processes and procedures and are removing waste or raw materials from the waste circulation administration.

**Q: How would you rate the approach that Serbian companies have to green transformation and what is your advice on how companies can expedite this process?**



Photographs: (top) PKS; (middle) Pexels/Ron Lach

### EMPOWERING ORGANIZATIONS TO BOOST ENVIRONMENTAL PROTECTION

The CCIS, WWF Adria Serbia and other institutions have been working on empowering close to 75 organizations by the end of 2025 by providing a 500,000-euro-grant. As Mr Šelmić explains, the green agenda expands capacities and increases the number of participants in this process through implementation. Although mainly focused on companies and improving the business environment, the CCIS is open to cooperation with civil society organizations. The civil sector can have a leading role in non-financial reporting and corporate governance through the territorial greening of local businesses. Through joint engagement, the civil sector will help boost the inclusiveness of vulnerable groups and the transparency of business operations.

A: It is difficult to give a general answer to this quite specific question. The response level to green transformation challenges varies, depending on specific industries and companies. There are outstanding companies in Serbia that are exporters to the EU and have been thinking about establishing complete circularity in their production for several years. They are now implementing exactly that. Of course, they now have an advantage in terms of fulfilling their obligation to make quarterly reports about direct and indirect emissions if they are exporters to the EU because the CBAM was formally launched in October this year and the first reports should be submitted in January next year. However, speaking of the overall environment, the circular economy and green business are still treated as an obligation that is yet to be dealt with and not as an inevitability that is already present, whether we are talking about recycled resources, product design, energy efficiency standards or waste treatment in production. These are all questions that EU partners ask our companies frequently, to which they sometimes have no adequate answer.

**Q: Which best EU practices should we apply more in Serbia to promote the development of the circular economy?**

A: We should focus on the multitude of existing circularity models in specific areas such as the textile, plastic and rubber industry to understand how digitization and green transformation go hand in hand. Also, we should focus on establishing industrial symbiosis, stimulating the transition to circularity through subsidies or tax incentives, stimulating knowledge transfer, accumulation of knowledge at universities and willingness to innovate, either in research centers or through internal investments in companies. All of these should be encouraged in different ways.

Domestic companies must adapt their business models, as this will be required by their EU partners, whether they are exporters or part of the supply chains of their foreign partners. Furthermore, banks will also have to change risk analysis methodologies due to ESG standards, EU taxonomy and different business models of companies, as well because of changed regulations. The pressure on companies to adapt their operations to fit the green agenda will come from customers and consumers, whose consciousness has also been rapidly growing. That is why the expedited process of adjustment of the country's business sector must begin as soon as possible.

Interviewed by: Mirjana Vujadinović Tomevski

Photograph: Unsplash/Mikita Yo


# LUXEN SOLAR – A RELIABLE PARTNER FOR THE SOLAR FUTURE

Product warranty for up to 20 years and 30-year-performance warranty

Solar cell technology is definitely one of the most important segments in the transition to clean energy. The great potential of this segment provides room for constant improvement of the solar panel production process. Manufacturers are aware of the fact that a reliable, top-quality product is the best advertisement; they pay special attention to these business segments. Company Luxen Solar, based in Vienna, the quality of work carried out by the Luxen Solar Company is verified because it is one of the most influential brands in the solar industry. They launched their operations in Spain in 2005, and today they have over 15 industry awards, employ more than 500 people worldwide and are one of the most innovative companies, as well as one of the TOP 20 exporters.

During almost two decades of operations, Luxen's research and development sector has been closely following the trends in the solar panel industry, which is why many have recognized them as a safe and reliable partner. So far, they have delivered over six gigawatts (GW) of panels and are developing fully automated production – robots – which will be controlled by artificial intelligence. The capacity of this plant will have been 10GW by 2026.

## Recognition of quality

The company's portfolio includes a wide range of products for both rooftops and ground projects. Following global trends in the industry and using the latest technology, their TOPCon N-series fulfils the highest


Photographs: Luxen Solar

**UNIQUE PRODUCT FEATURES:**

- Temperature Pmax -0.29%°C
- Special moisture protection (special encapsulant)
- Special frame design that carries a higher load
- 2 hours more production per day (730 hours per year) compared to conventional modules
- 15% more bifaciality compared to conventional modules

quality standard in the design and functionality of solar panels. The Tier 1 status awarded by BloombergNEF testifies to the quality of the company's products.

The TOPCon N-Series is manufactured in a state-of-the-art digitized Industry 4.0 facility with brand-new robotic equipment driven by artificial intelligence. The product line includes the N6 Series with 210mm technology and the N5 Series with 182mm technology, which are adapted to the different requirements of rooftop and ground projects.

Some of the key advantages of the N-series, compared to conventional modules, are almost 2.5 per cent more electricity production after 30 years, up to eight years longer warranty and 85 per cent bifaciality, which is 15 per cent more compared to the market standard. The solar panels of this series generate two hours more electricity a day, that is, 720 hours a year and 21,900 hours more over 30 years, with a significantly lower temperature Pmax of -0.29%°C.


## Advantages of using new technology

The benefits of the N-series of solar panels are reflected in the reduction of the 'levelized cost of electricity' (LCOE). This was achieved by boosting the efficiency of the cells up to 28.7 per cent and the smaller module area. At the same time, production was increased. Still, degradation was also significantly reduced – only one per cent in the first year compared to 2-2.5 per cent when it comes to the use of conventional technology. There is also a longer lifetime under warranty and continuous high-power output in low-light conditions. The N-series TOPCon occupies a leading position when it comes to having numerous advantages over today's standard technology.

It has resulted in Luxen Solar offering clients a product of exceptional quality and performance that results in a faster return on investment and ensures optimal use of space, long-term reliability, energy independence and a competitive edge in the market. These solar panels effectively help produce clean energy that creates a sustainable future while reducing electricity costs.

Prepared by: Milica Radičević


# SEE ENERGY 2023 – DECARBONIZATION AS A PRIORITY

Regional energy conference SEE ENERGY – Connect & Supply 2023 brought together numerous experts, investors, industry representatives, decision-makers, technology manufacturers, consultancies, government representatives and financial institutions.

The main topic of the first day of the conference was decarbonization in the business sector, transport, energy and oil industry, connection to the power transmission grid, storage and the electricity market.

Particular attention was given to the segment of decarbonization in the business sector. The conference participants pointed out that the transition period has begun and that the emission of carbon dioxide will be mandatory until the end of 2025. Until then, special temporary measures for the Carbon Border Adjustment Mechanism (CBAM) will apply. Regarding Serbia, during the transit period until the end of 2025, it won't have to pay any fees but will have to release mandatory quarterly reports. Each company must provide accurate data on how much carbon dioxide they emit per product in these reports.

Fines ranging from 20 to 50 euros per ton of $CO_2$ emissions will be charged for falsifying the results, and if companies do not measure or calculate and report their emissions for the covered products, data on emissions from the biggest polluters in the European Union will be taken as valid. EU importers are required to submit the first CBAM report for the fourth quarter of 2023 by January 31, 2024.

## Eliminating the emission of harmful gases

When it comes to decarbonization in the transport sector, one of the biggest generators of harmful gases that negatively impact the environment, its transformation is crucial in the fight against climate change. This, as well as technological innovations and strategies that will shape the future of this sector, were the topi-

Photographs: Serbio

highly efficient traffic grids, modernize roads and railways and promote public transport in order to reduce the emission of harmful gases.

Panel moderator Filip Mitrović, electromobility specialist from 360 Mobility, spoke about how each petrol station located on the first category roads must have one fast electric charger.

Miloš Kostić spoke about installing chargers throughout Serbia and developing the first regional application for electric charging, Charge&GO. He pointed out that the company, which he heads, has been working hard on promoting and developing electromobility in our country and that the company's goal is to have the largest network of fast chargers in the country.

"So far, we have installed 68 chargers for electric cars. They can be found all over Serbia – for instance, at Gazprom Petrol and OMV petrol stations, Stop Shop, BIG Fashion parking lots and other busy locations. We plan to expand the network beyond the borders of our country, to North Macedonia, Montenegro, Bosnia and Herzegovina, and we are constantly looking for locations where we could install fast chargers", Mr Kostić pointed out and added that Charge&Go has over 1,550 registered users.

Darko Zeljković, from Schneider Electric, believes that digitization plus electrification provide sustainability. He also pointed out that, besides chargers and electric cars, a big challenge for electromobility is the power supply issue and the huge amount of data that needs to be processed and stored in data centers. Plus, there is also staff that needs to be trained. Dejan Dešić, from the ABB Company, added that education related to infrastructure for electric vehicles played a key role in that. Dejan Milovanović, Senior Sales Manager in the Distribution Systems Business Unit, Operating Company Smart Infrastructure at Siemens Belgrade, pointed out that Siemens closely follows developments regarding electromobility and, with its innovations, strives to make it easier for the users of electric cars.

Next, the experts discussed strategies, the oil industry's key role in decarbonization, and the key obstacles and challenges of connecting RES projects to the power grid. There was also talk about the electricity market and critical aspects of financing renewable energy projects and the sale of electricity in the free market.

The second day of the conference, which was co-organized with the German Organization for International Cooperation GIZ, was dedicated to the regulatory and legislative development of heat pumps, technologies, implementation and financing of the RES heating sector.

The SEE ENERGY – Connect & Supply 2023 conference was held on October 2 and 3, 2023, at the Sheraton Hotel in Novi Sad.

Prepared by: Milica Radičević

> Fines ranging from 20 to 50 euros per ton of $CO_2$ emissions will be charged for falsifying the results, and if companies do not measure or calculate and report their emissions for the covered products, data on emissions from the biggest polluters in the European Union will be taken as valid

cs of another panel discussion. The panel participants agreed that efficient infrastructure is necessary for the development of electromobility. In addition to the development of e-mobility, countries should work on revitalizing the existing and building

# CIRCULAR ECONOMY – THINK LOCALLY, ACT GLOBALLY

Global warming, environmental devastation and ecosystem pollution have contributed to actualizing the circularity concept. The circular economy (CE) seeks to replace the conventional linear model, as it assumes the reuse of waste as an input in the following production process. In this regard, it is based on two principles:

(1) efficient management of resources and
(2) waste reduction.

In other words, CE encourages a more rational use of limited natural resources. It also results in lower pollution costs by reducing waste from production and consumption. The wide application of the circular economy in various segments of the economy contributes to accomplishing sustainable development goals.



Photographs: (bottom left) Pexels; (bottom) Pexels/Sarah Chai

Many global economies, including the European Union, have accomplished significant results in circularity. SOn the other hand, Serbia is in the initial stages of development

Several prerequisites need to be met to implement CE effectively. To begin with, it is important to define the legal framework and institutional support. Second, innovations are significant for achieving circularity. Namely, this connection is like a two-way street because the further application of this principle promotes innovations and boosts micro and macro competitiveness. Third, there has to be communication and cooperation between companies, consumers and other stakeholders in all stages of the product life cycle. Finally, educating the population is an indispensable link in awakening environmental awareness and expanding ecological perspectives.

**OLGA GAVRIĆ, PhD, is an assistant professor at the University of Belgrade's Faculty of Agriculture. She was born in Belgrade, where she finished elementary and high school. She completed her undergraduate, master's and doctoral studies at the Faculty of Economics (University of Belgrade). In February 2023, Ms Gavrić earned her doctoral dissertation on "Impact of Clusters on the Development of the Green Economy: Consequences for the Economic Competitiveness". She started her career in 2009 working for the privately-owned company Tekon Tehno Konsalting as assistant director. In 2012, she did a one-month internship at the Italian company Edison. The same year, she started working as a teaching associate at the Faculty of Agriculture (University of Belgrade), teaching Agroeconomics. Currently, she teaches the Basics of Economics, Macroeconomics and Economics of Natural Resources and the Environment to undergraduate students. In 2022, Dr Gavrić participated in writing and implementing various projects and started holding green workshops titled "From Linear to Circular Economy". She is the author of numerous scientific works and articles and is fluent in English and Italian.**

One of the main features of the circular economy is the creation of green (eco) products

Photographs: (middle) Pexels/Polina Tankilevitch; (top right) courtesy of Olga Gavrić

## Circular economy and eco-products

One of the main features of the circular economy is the creation of green (eco) products. Consequently, eco-products have a minimal environmental impact in all phases of the product's life cycle. Also, green products must be clearly labelled and declared to identify and inform customers more easily. In general, eco-products differ from classic products in terms of their properties and added value for the consumers. The circular economy has various economic effects: it contributes to the development of new markets and distribution channels, and it facilitates the emergence of new business models and higher employment. In practice, recycling is often transformed through the circular economy process. However, recycling is only one of the segments of a much broader notion of this concept.

Many global economies, including the European Union, have accomplished significant results in circularity. On the other hand, Serbia is in the initial stages of development. In this regard, concrete steps and developments have been made in previous years. Last year, the Circular Economy Action Plan was written, stipulating nationwide activities and measures until 2024. Implementing this Action Plan is a kind of support for the green transition in the Republic of Serbia, as well as the accomplishment of the Green Agenda goals in the Western Balkans. In parallel with the Plan and cooperation with the Global Environment Facility (GEF), the United Nations Development Program (UNDP) and the Serbian Ministry of Environmental Protection selected nine projects following a public call to submit innovations in the circular economy. The common feature of the selected projects is the reduction of greenhouse gases, waste generation and disposal costs, and less environmental degradation. In addition to environmental aspects, some of the projects also have a social component, thus proving the initial premise of sustainability.

A green workshop on 'From Linear to Circular Economy' will take place at Work Space One in Novi Beograd this October

The transition from a linear to a circular model presupposes clearly



Photographs: (top) Pexels/Vie studio; (middle) Pixabay/Lily Yang

defining its implementers. With that in mind, the main implementers in Serbia are, in most cases, corporations and large production systems, as well as small entrepreneurs whose importance is not negligible. Namely, despite local influence and small market share, small producers and new brands of eco-products not only have a lower ecological footprint and degrade the environment less but also contribute to more efficient waste management and rational use of resources, as the basic premises of CE.

The wide application of the circular economy in various segments of the economy contributes to accomplishing sustainable development goals

## Domestic market and green products

In recent years, several interesting green products have appeared on the domestic market. Ecoserein and Eco.s brands stood out because they contributed to reducing plastic waste in Serbia. Namely, Ecoserein produces toothbrushes and hairbrushes from bamboo as an input instead of plastic. Eco.s produces thermal water bottles that can be used for a long time and repeatedly and completely replace the dominant use of conventional plastic. It is a well-known fact that the long-term accumulation of plastic waste has a very pronounced negative impact on the environment. The reason for this is a very long time that plastic needs to decompose.

On the other hand, there are environmentally friendly companies in Serbia that combine entrepreneurial activities, which results in (circular) industrial symbiosis and a form of synergy. Such joint initiatives lead to a positive domino effect and have multiple benefits for society as a whole. Specifically, the Kristalni Vuk brand exclusively sells products in eco-packaging made from recycled materials. In this regard, the brand collaborated with the Naša Kuća Company, known for creating unique paper made from recycled cigarette packs. The aforementioned eco-producers use social media and other platforms for advertising, thereby additionally contributing to the diffusion of ideas and informing consumers.

Trends in the reduction of textile waste led to the emergence of domestic slow fashion producers. These tendencies first encouraged global fast fashion (Zara, H&M) and high-end (Stella McCartney) brands to develop sustainable fashion lines, which, in the next step, led to the affirmation of manufacturers based on the zero-waste concept. In particular, Cozy to Wear, Vale Dsgn and Lagami are some local brands that use natural and biodegradable materials for their limited fashion series. Such production of clothing items reduces the water and carbon footprint, as well as pollution (through production and waste disposal), as well as other environmental externalities in the form of effects on human health.

In the coming period, one of the ideas with great potential is the launch of the Re.ekko platform, which aims to gather, connect and inform all local slow fashion companies, as well as interested consumer groups. In other words, Re.ekko strives to increase the visibility and reach of new eco-brands in the domestic market.

In addition to entrepreneurial initiative and institutional support, educating the population is extremely important for the dissemination and application of the concept of circularity. Education can be implemented in different ways, starting from organizing environmental campaigns to holding creative workshops on the topic of environmental protection.

Photograph: Unsplash/Dario


# THE FUTURE OF GREEN CONSTRUCTION

At a time when the world is facing increasingly pronounced challenges caused by climate change, sustainable green construction is a key component of their solution. This is not only about buildings that look modern and, at first glance, exist in harmony with nature but about buildings which, at their core, reflect a much deeper understanding of ecology, energy, and responsible construction.

The Croatian Green Building Council (GBC) is the largest non-governmental and membership organization in Croatia. It deals with sustainable construction, energy efficiency and green energy. It is also engaged in the business network of the companies and organizations that are green transition leaders. The GBC has over 130 members from construction, energy, public administration and the academic community, and its main goal is to help its members and other relevant market players act in the direction of a sustainable, urban way of life. The GBC achieves this goal through education, networking and promotion.

It is important to mention the CROskills-RELOAD project, whose goal is to improve the skills of construction workers and engineers related to energy efficiency




Photographs: (top) Croatian Green Building Council; (bottom) Pixabay/CyberComputers

The Croatian Green Building Council acts as a platform for promoting positive impact of sustainable construction. It rests on four pillars – membership, events, projects and certification

**DEAN SMOLAR is a pioneer in sustainable energy, mobility and climate change in Croatia, recognized for its expertise in energy efficiency, sustainable mobility and green construction. Since 2017, he has been the Executive Director of the Croatian Green Building Council. In this position, he provides advisory services to government organizations on the effective implementation of energy policies. He proudly represents Croatia in EU research and development projects related to energy, green building, and mobility, including Horizon Europe and LIFE.**

According to certain recently published estimates, buildings in the European Union (EU) produce approximately 40 per cent of emissions. They are huge energy consumers responsible for 35 per cent of construction material consumption and 35 per cent of waste generation in the same sector. That's why buildings have the greatest potential for savings and are a key point in the EU's interest in becoming climate-neutral by 2050.

Given that the Croatian Green Building Council is one of the important organizations in promoting sustainable practices in the region, we got more specific insights into this issue in our conversation with the Council. We spoke with its Executive Director, Dean Smolar, about the challenges and solutions, as well as the Council's future initiatives.

## A part of a wider network

With 76 countries worldwide and over 36,000 members, the World Green Building Council (WGBC) is the largest and most influential global network aiming to promote a sustainable and decarbonized environment for all. The Croatian Green Building Council is part of this network, as well as the European Regional Network of Green Building Councils (ERN). Through global connectivity, common goals are accomplished through various local, regional and world projects. The Croatian Green Building Council actively participates in projects financed from national and Europe-

Photograph: Unsplash/Gene Gallin; (Smolar) courtesy of Dean Smolar

## CONFERENCE ON SUSTAINABLE CONSTRUCTION

The main conference on sustainable construction, organized by the Croatian Green Building Council, will take place in Zagreb for the sixth consecutive year. So far, more than 4,500 people have participated in the event, which gathers professionals from various business branches, usually at the end of the year. Also, more than 200 presentations have been held, and over 250 experts have given lectures and participated in various panel discussions. Considering the interest, more than 1,000 visitors are expected to attend the main event this year, at which they will hear about the latest information in this field.

an sources, where, as partners, they have the opportunity to demonstrate their capabilities.

The Croatian Green Building Council acts as a platform for promoting the positive impact of sustainable construction and everything that goes with it. It rests on four organizational pillars – membership, events, projects, and certification.

"In addition to membership, GBC successfully organizes various educational events and conferences, workshops, and symposiums, which more than 10,000 participants have attended. Everything functions as a single platform for primarily national networking of policymakers and industry leaders and their exchange of ideas. Thus, in the last few years, GBC has been engaged in these segments as a key partner in numerous projects", says Mr Smolar.

For the past year, they have been working a lot on developing the DGNB green building certificate, which is an abbreviation for the German Sustainable Building Council (Deutschen Gesellschaft für Nachhaltiges Bauen)



Photographs: (top) Unsplash/Roar Skotte; (bottom) Croatian Green Building Council

and its version adapted to the Croatian market. They also organize training sessions about this certificate for future consultants as an official Academy Partner.

The DGNB certification system is the only one completely aligned with EU regulations and norms, so it does not require harmonization of documentation for the European market. The GBC is the DGNB's partner in Croatia, i.e. the only organization in the country through which a project can be registered for certification. The DGNB brings not only a certification system but a vision of transformation of the construction industry. Founded in 2007 as an independent non-profit organization, it quickly gained a reputation as one of the most advanced international sustainable construction standards, with over 10,000 certified projects in nearly 30 countries.

## Impact on national policies

The Croatian Green Building Council cooperates with the relevant representatives of the authorities in Croatia and the EU, as well as with the private and public sectors, to implement sustainable development principles.

"We created two types of national guidelines for nZEB buildings (nearly zero-energy buildings) for the Croatian Ministry of Physical Planning, Construction and State Assets, in cooperation with the Faculty of Architecture. These are 'Guidelines for Experts and Designers' and 'Guidelines for the General Public and Investors'. By having these guidelines, we brought closer and explained in detail what green construction means and how to use it in the real sector," Dean Smolar explains.

Today, investors no longer want to invest in a project that is not sustainable, considering national laws and EU regulations. Following this regulatory policy, they believe a sustainable project will ensure a higher return on their final investment and boost competitiveness in the real estate market because the project will automatically have additional market value and save large quantities of energy.

It is important to mention the CROskills-RELOAD project, on which the GBC cooperates as a partner. The project's goal is to improve the skills of construction workers and engineers related to energy efficiency.

"The key contribution of the CROskills-RELOAD project to decarbonization is by creating guidelines and a training system to help workers master the skills needed to work on energy efficiency projects. The most important thing is that the project stimulates lifelong learning and the development of skills related to energy efficiency in the construction sector, all to achieve the decarbonization goals by 2030", Dean Smolar underlines.

The project revealed that Croatia currently lacks about 20,000 qualified workers who could carry out energy renovations, with every fifth worker being a foreigner.

The reason for this is that there isn't enough interest in three-year vocational schools, which should be rectified by additionally motivating students to enroll in these schools. To restore a sufficient number of buildings, which would achieve the goals of the European Green Plan and decarbonization by 2050, an investment of as much as 32 billion euros is needed.

## International projects

The GBC collaborates on several projects as a coordinator or partner with Mr Smolar, singling out some of the most important international projects that are currently being implemented.

One of those – ReCreate – reveals how used concrete elements can be deconstructed without damage and to be reused in new buildings. Pilot projects will be implemented in Finland, Sweden, the Netherlands and Germany, where prefabricated concrete elements will be used in practice.

This project focuses on reusing concrete, which has a significant impact on the environment. Reusing concrete elements can reduce energy consumption and carbon footprint by between 93 and 98 per cent per individual element.

The BuildingLife II (2023–2027) project is a continuation of the BuildingLife (2020–2022) initiative. The idea is to encourage the industry to implement the principles of road maps in decarbonizing buildings. The eponymous campaign attracted more than 150 high-ranking officials from the private and public sectors, who promoted the reduction of the carbon footprint during the lifetime of buildings.

Prepared by: Milica Vučković

# CHARGE&GO WITH THE NEW APP, IT'S EASIER TO FIND A CHARGER

Electromobility in Serbia has reached a new level, as shown by the latest data that the number of registered electric cars has increased significantly compared to last year, by as much as 20 per cent. More electric vehicles on the streets also create a greater need for chargers. The leaders of the company Charge&GO realized in time that it was necessary to expand the network of chargers for electric vehicles along with a new application, making the chargers easier to find.There are 68 chargers located on the Charge&GO network throughout Serbia.


– Drivers of electric vehicles can already use our fast charger, located within the Beograd shopping center BIG FASHION on Karaburma, and whose power is 120 kW. When they head towards Inđija or Vršac, they can stop by the BIG shopping centers in Nova Pazova or Pančevo and recharge their batteries there. The charger in Pazova has a power of 50 kW, and in Pančevo, it has a power of 60 kW. We expect a further and intensive expansion of the network, and soon we will put chargers into operation in the BIG shopping centers in Novi Sad and Rakovica in Beograd, as well as in the BIG FASHION Outlet in Inđija. I want to point out that two chargers are already working as part of the NCR in Novi Beograd, which has improved the offer and availability of chargers in this municipality. Every charger we put into operation is important for our users, and we are constantly looking for new locations where drivers of electric vehicles will be able to take a break and charge their vehicles at ultra-fast chargers – explains Tamara Zjačić, the company's deputy director. Information was recently published that the European Union adopted a decision by which a charger for electric cars will be placed on every 60 kilometers of the highway by 2026. When asked how far we have come with the development of the charging infrastructure along the highways, Tamara tells us that there will be more and more charging stations on the main road routes and that the offer will be completed by new charging stations at OMV pumps and



Photographs: Charge&GO

The company Charge&GO has prepared a new application, which is available for IOS and Android phones, within which it is possible to see the network of chargers throughout the country and Europe

Tamara Zjačić

**deputy director of the company Charge&GO**


There are 68 chargers located on the Charge&GO network throughout Serbia

other locations that are close to the key road.

– The plan is to soon put the charger into operation at the OMV pumps in Zemun, Ada Ciganlija and Zaječar. The charger in Zemun, with a power of 240 kW, will be the strongest ultra-fast charger in the Charge&GO network. Since it is placed in a very busy place, we believe that it will contribute to the ease and comfort of driving an electric car – emphasizes Zjačić.

In mid-October, Mladenovac received its first ultra-fast charger with a power of 150 kW. The location where this charger is located is only 10 minutes away from the highway.

– This is a significant project for us because there are no chargers in this part of Serbia, so it will make it much easier for drivers, both local and foreign, to charge their vehicles near the highway – she says, adding that negotiations are currently underway and for several new locations in Beograd for ultra-fast chargers that should be at the service of drivers by the end of the year.

## New application

The company Charge&GO has prepared a new application, which is available for IOS and Android phones, within which it is possible to see the network of chargers throughout the country and Europe.

– To expand to other markets, we have created a multilingual and multi-currency platform that supports different regulations in individual markets. Thus, clients will not have to change applications when moving from one country to another but will use only one, ours, which is easy to manage and complies with all regulations in each market where we offer the service – adds Tamara Zjačić.

Clients with their electric vehicles can travel around Europe and use the application without any problems because it integrates the largest European e-roaming platform with a list of more than 400,000 chargers.

The registered user, by simply checking his account in the application, has an overview of the entire overview – payment, account, charging session and the like. For registered users, the most important benefit is that they have a lower charging price for all chargers in the Charge&GO network.

The system is fully user-friendly, and whenever the user is at the charger and cannot start charging, they can call customer support and get the help they need.

– We have customer support that is available every day, and we also have a technical support team that specializes in maintenance and service of the charging infrastructure – emphasizes Tamara.

The company Charge&GO has big plans, and they are focused on expanding the network in regional markets so that by the end of next year, they will install and integrate 70 more ultra-fast chargers on the platform.

Prepared by: Milica Radičević


# RES SERBIA 2023 CONFERENCE – GREEN ENERGY IN SERBIA AND THE REGION

The Serbian Association of Renewable Energy Sources held the RES SERBIA 2023 this year again, which brought together the most important representatives of green energy in Serbia and the region. After the successful conferences in 2021 and 2022, the RES SERBIA 2023 conference took place on September 14 in Vrdnička Kula, on Fruška Gora, under the working title "Serbia after Auctions", a topic that generated a great deal of interest in our country's energy sector recently.

In the introductory remarks, Dušan Živković, acting Director General of the Electric Power Industry of Serbia (EPS), said that for EPS, the greater share of renewable energy in overall energy generation is one of the most important development tasks in the coming period. He also said that one of the crucial projects in recent history was the Bistrica reversible hydroelectric power plant project, which will ensure a balanced and stable electric power system not only in Serbia but also in the region.

The Serbian Minister of Mining and Energy, Dubravka Đedović Handanović, spoke about the first auctions that took place and added that the state authorities understood well the main messages of investors in the energy sector, which is to create prerequisites for the construction of new production power plants as soon as possible, something that the entire society needs. According to her, relevant documents were drafted that should provide predictability to investors for further projects. One of these is the Integrated National Energy and Climate Plan, which is in the process of being adopted and which, by 2030, foresees an increase in the share of RES in electricity production to 45 per

Photographs: RES Serbia

cent and a reduction of greenhouse gas (GHG) emissions by 40.4 per cent compared to 1990.

During the panel discussion titled "The Situation in the RES Sector – Serbia, the Region and Europe", Dirk Buschle, Deputy Director of the Energy Community Secretariat, commended Serbia's effort and said that the Energy Community is interested in helping our country to develop RES further. Matteo Colangeli, regional director of the EBRD for the Western Balkans, spoke about the first auctions in the energy sector, while Alessandro Bragonzi, head of the EIB regional office for the Western Balkans, said that EIB has also been supporting all European countries to accomplish one of the most important goals, that is reducing the use of fossil fuels.

Maja Pokrovac, director of RES Croatia (OIE Hrvatska), spoke about Croatia's experiences with auctions, adding that at the beginning, there was no readiness for such a project because it was not attractive for investors. Such conferences are important because, as she pointed out, companies must raise their voices and speak about their needs, while the state authorities must also be involved and active. Walburga Hemetsberger, Director of SolarPower Europe, also agreed that all actors engaged in RES should unite.


The conference also focused on wind energy, as well as the situation in the Serbian energy sector post-auctions and Europe after the energy crisis. The conference participants expressed their satisfaction with the first auction in Serbia. They also discussed the important topic of balancing, which will remain the main problem in the coming period, and the process of obtaining building permits. According to them, issuing building permits in Serbia needs to be expedited. Regarding the EU Members, although Germany doubled the number of permits issued for wind turbines, it is still falling behind the set goal.

Panel moderator Giles Dickson, CEO of WindEurope, the leading European association that brings together more than 400 members from the wind industry, quoted Ursula von der Leyen, who said, "The future of our clean technology industry must be created in Europe" and brought up the issue of turbines produced outside Europe, which price is lower. Speaking about Serbia, the panelists pointed out that after the auctions, the focus should now shift to procuring wind turbines. However, Serbia purchasing wind turbines that are not of European origin is not in the EU's best interest. The challenges of financing RES projects were discussed, too, and the panel participants agreed that feed-in tariffs are gradually going to be replaced, and they see power purchase agreements (PPAs) as the future. It was also pointed out that banks in our country are very interested in financing solar and wind energy.

During the panel discussion "Solar Energy in Serbia – the First Auctions – Small and Large Solar Plants", Nebojša Vučinić, Director of the Development Division in the Elektromreža Srbije Company (EMS), spoke about the capacity of the existing transmission system when it comes to taking in RES, adding that EMS has drawn up a development plan and conducted an analysis which showed that the power transmission system can currently balance around 5,800MW of variable renewable electricity sources.

Predrag Matić, Director of the Planning and Investments Division of the Elektrodistribucija Srbije Company, said that currently, there are 380 electricity producers connected to the transmission system, not taking into account prosumers, with a total of 263MW of installed power. When it comes to connection requests that are currently being processed, Matić says that there are 2,506 of them for 1.9GW of total installed power, of which 274 were approved, and their connection to the power transmission system is expected to take place soon. Regarding prosumers, Matić says that Elektrodistribucija has 2,064 registered prosumers with a total installed power of 26MW and that there are still 1,500 requests currently being processed.

The last panel focused on the readiness of the Serbian electricity market for the investment boom, which, as it is believed, will follow the recent auctions. Miloš Mladenović, Managing Director of SEEPEX, spoke about the continuous intraday electricity market, which currently has 20 participants. He referred to last year's electricity price of 275 euros per megawatt-hour and pointed out that such a high price probably would not happen again because the adverse situation this year has been subsiding.

Regarding auctions, David Žarković, Director of the EPS Free Market Trade Sector, said that the current prices did not come as a surprise and that they probably won't decline. Speaking about balancing, he stated that EPS gave a favorable fixed balancing price for auctions.

Prepared by: Katarina Vuinac

# THE PIONEER PROJECT OF THE MT-KOMEX COMPANY IN BIH – REŠETNICA

Competence and expertise in constructing solar power plants have brought MT-KOMEX to the position of a reliable and valuable partner in the energy sector. As such, it is recognized throughout Serbia, considering it has successfully developed and equipped many solar plants on the ground and roofs. However, now is an excellent opportunity to prove itself as a serious partner outside our borders.

Embarking on building a sustainable future, the company MT-KOMEX has recently expanded its operations to Bosnia and Herzegovina, where it will soon, together with MT-KOMEX BH d.o.o. start its debut project in this country – Photovoltaic (PV) Power Plant Rešetnica. This solar power plant will be built in the place of the same name in the city of Goražde. It will represent a combination of technological skill and environmental awareness, administratively belonging to the Bosnian-Podrinje Canton.

The construction of the solar power plant in Bosnia and Herzegovina will be carried out on a turnkey basis,


The solar power plant will be positioned at about 900 meters above sea level, while the plateau planned for the PV power plant Rešetnica installation will cover about 8,200 m² (or 0.82 hectares) of the 10,015 m² total plot size



Photographs: (top) Unsplash/Michael Fortsch; (middle) *GoogleEarth*

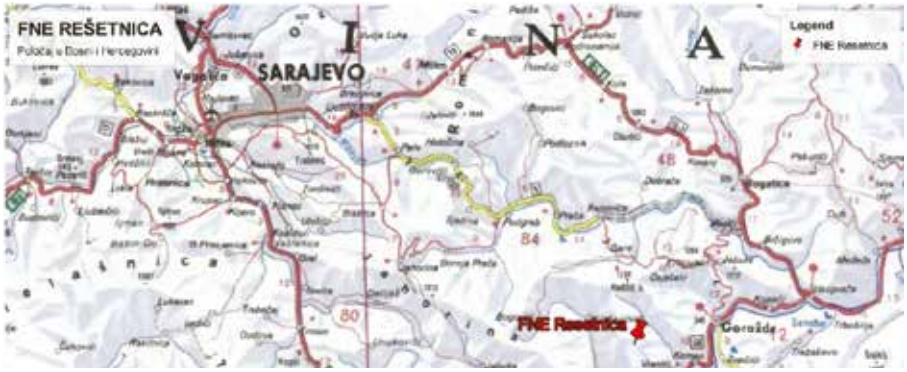
The construction of the solar power plant in Bosnia and Herzegovina will be carried out on a turnkey basis, which means that the contractor is responsible for all phases of the project, including – the design, delivery, assembly, and testing of the photovoltaic power plant

Radoslav Marić
**director of MT-KOMEX BH d.o.o.**

which means that the contractor is responsible for all phases of the project, including – the design, delivery, assembly, and testing of the photovoltaic power plant. Therefore, the planning and creation of the model of the power plant, the delivery of the necessary materials, technology, and labor to the site, then the installation of panels, the installation of inverters and other necessary infrastructure, and finally, ensuring that the entire system works – is entrusted to the company's expert team. The application of this method implies that the investor, Public Enterprise Elektroprivreda Bosne i Herzegovine d.d. – Sarajevo, will be presented with the final product, i.e. a fully functional plant ready for work, which relieves them of the hassle of managing numerous tasks and complex phases of work.

The solar power plant will be positioned at about 900 meters above sea level, while the plateau planned for the PV power plant Rešetnica installation will cover about 8,200 m² (or 0.82 hectares) of the 10,015 m² total plot size. The chosen site should provide not only a solid platform for construction but also a great potential for efficient use of sunlight for high-yield energy production.

Luxor Solar's solar panels will be used to construct this facility. The choice of panels is based on their efficiency in converting sunlight into electricity – an essential attribute, then longevity and reliability in different weather conditions, given that recent storms in these areas have made it clear that this is an important criterion when panel selection.




On the other hand, Fronius inverters should enable efficient and reliable power conversion and thereby also contribute to the optimal functioning of the entire system.

– Of course, the key issue is the total capacity that the power plant will have. Therefore, it is planned that the PV power plant Rešetnica, with an installed power of 1,050 kWp, and a total output/active power of 800 kW AC, will produce an estimated annual energy of 1411 MWh – said Radoslav Marić, director of MT-KOMEX BH d.o.o.

The company MT-KOMEX realized that with its many years of experience and knowledge, it could help develop projects in the field of renewable energy sources in Bosnia and Herzegovina by establishing MT-KOMEX BH d.o.o. In addition to the contract for the construction of the PV power plant Rešetnica, negotiations are ongoing for the construction of four more solar power plants in BiH, three on the roof and one on the ground. The company's engineers and installers are ready for all the challenges that business brings them in this area, and they are here to help every client construct a solar power plant.

Prepared by: Milica Vučković

Photographs: (Marić and middle left) *MT-KOMEX*; (bottom) *GoogleEarth*

# NEWS FROM THE COUNTRY AND THE WORLD

## EU CONTINUES PHASING OUT USE OF CHEMICALS THAT HARM THE OZONE LAYER

EEA's indicator on the consumption of ozone-depleting substances shows that the EU continues to actively phase out the use of these chemicals, in line with its commitment under the Montreal Protocol.

Ozone-depleting substances (ODS) are widely used in refrigerants, polymers, pharmaceuticals, and agricultural chemicals.

Data for 2022 shows that consumption of ODS in the EU was negative (-3,623 metric tonnes). Negative consumption of ODS means statistically that more of these substances were destroyed or exported than produced or imported.

The updated data is published ahead of the International Day for the Preservation of the Ozone Layer, celebrated annually on 16 September to commemorate the signing of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987.

Stopping the use of ozone-depleting substances is crucial to protecting the ozone layer in the Earth's atmosphere. The ozone layer serves an important function as it absorbs the sun's ultraviolet rays, which can pose a danger to the environment and human health.

Source: EEA

## EU AQUACULTURE IN 2021: 1.1 MILLION TONNES FARMED

In 2021, an estimated 1.1 million tonnes of aquatic organisms were farmed in the EU, valued at 4.2 billion euros. Aquaculture, also known as aquafarming, involves the controlled cultivation of fish, molluscs, and crustaceans.

Four EU countries collectively accounted for about two-thirds (68 per cent) of the total production of farmed aquatic organisms in 2021: Spain 25 per cent, France 17 per cent, and both Italy and Greece 13 per cent.

Nevertheless, production within the EU was less than that of Norway, where 1.6 million tonnes of aquatic organisms were produced, most of which was farmed salmon.

Production in the EU is focused primarily on finfish species (such as trout, seabream, seabass, carp, tuna, and salmon) and molluscs (including mussels, oysters, and clams), which together accounted for almost all of the aquaculture production by weight in 2021. Different aquatic organisms command different prices. The production value of trout and seabass in 2021 was higher than other species in the EU (each accounting for a 14 per cent share of the total value of the EU's aquatic farming in 2021).

There is a high degree of aquaculture specialisation within the EU. Spain produced about seven in every 10 tonnes of the EU's farmed Mediterranean mussels in 2021. France farmed most the EU's Pacific cupped oysters (88 per cent of the total) and was the main provider of the EU's farmed blue mussels (45 per cent of the total). Italy produced the vast majority (92 per cent) of the EU's farmed Japanese carpet shell. Greece produced most of the EU's farmed gilthead seabream (69 per cent of the total) and European seabass (53 per cent). Farmed Atlantic bluefin tuna was most produced in Malta (72 per cent of the EU total), while Ireland was responsible for almost all the farmed salmon in 2021 (96 per cent).

Source: Eurostat



Photographs: (left) Unsplash/actionvance; (right) Pixabay/LTapsaH

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## HOW TECHNOLOGY CAN MAKE THE CLIMATE CRISIS ACCESSIBLE, UNDENIABLE AND ACTIONABLE

We've all seen haunting images of receding glaciers, but how many of us have ventured into their melting heartlands, felt the ancient ice slipping away or heard the roar as it cascaded into the ocean?

An immersive approach to the climate crisis not only sparks much-needed collective action among government, science and business, but can also lead to more environmentally conscious decisions in the physical world. By transporting decision-makers into hard-to-reach environments via virtual tools, it makes the abstract tangible. It makes the distant Arctic and Antarctic crises accessible, immediate and undeniable.

**Climate crisis: nearing the point of no return**

Of 16 climate tipping points, critical thresholds where relatively small changes in conditions can lead to abrupt and often irreversible shifts in the climate system, five lie in the polar regions. And here's the rub: At just +1.5°C of warming, the target of the Paris Agreement, three of these – Greenland Ice Sheet collapse, West Antarctic Ice Sheet collapse and Boreal Permafrost abrupt thaw – will be triggered. What makes this particularly concerning is that as these tipping points are activated, they can exacerbate global warming themselves, creating a self-reinforcing cycle. This, in turn, could propel our world into a state that's more than +2°C warmer, with dire consequences for ecosystems and societies worldwide.

It's clear that we're facing a climate emergency. But when talking about melting ice at our planet's poles, it can be hard to visualize what that means for the world, for its people and for us each individually. Leading voices on global environmental risks have long remarked on the need for greater awareness surrounding critical ecological challenges and their potential consequences. It can be even harder to translate that urgency into the many steps – both large and small – that will help us collectively come together to address it.

**All is not lost**

The good news is that even as the crisis grows, so does our capacity to address it. Emerging technologies, including artificial intelligence (AI), virtual reality (VR) and augmented reality (AR), serve as powerful tools that help us realize the challenges we face – while also powering platforms that can elevate diverse voices and advance ideas in our efforts to solve it.

In the World Economic Forum's Global Collaboration Village, a purpose-driven platform powered by next-generation technology and initiated by the World Economic Forum in partnership with Accenture and Microsoft, a new Polar Tipping Points Hub has been unveiled. Developed with expertise from Arctic Basecamp, this hub offers a unique visualization of all the climate tipping points and the potential cascading risks they pose.

By pooling data from institutions, including Arctic Basecamp, NASA, and the National Snow and Ice Data Centre (NSIDC), the hub employs live simulations to present a unique visualization of impending threats, such as sea-level rise, extreme weather events, heat stress and heat waves, compromised food and water security, climate migration, disease exacerbation and disruptions in logistics and supply chains.

In the hub, people can harness immersive digital landscapes to conduct intricate real-time simulations and modelling of future situations, enabling them to examine polar warming trends that depict the consequences of not meeting climate targets, including the loss of sea ice, permafrost thaw and ice sheet collapses. This unique experience also showcases how one global risk is connected to the other, through polar change. It also highlights how triggering climate tipping points can drive temperatures higher than anticipated.

Source: World Economic Forum

Photograph: Unsplash/James Eades

## 3 MYTHS ABOUT ZERO WASTE EXPLAINED

Waste is becoming an increasingly pressing issue: for our environment, for our societies, and for human health. Moving towards a zero-waste future is not just a lofty goal but a necessity. And it can help us get closer to achieving Sustainable Development Goal 12 on responsible production and consumption patterns.

The concept of zero waste represents a systemic shift that requires rethinking our consumption patterns and production methods to reduce pollution, conserve resources and minimize the amount of waste we generate.

While the zero-waste vision has garnered much attention, there are some common misconceptions. Let's debunk three of these myths and gain a better understanding of how zero waste can work in practice.

**MYTH 1: Zero waste means producing absolutely no waste at all**

One of the biggest misconceptions about zero waste is the belief that it means producing absolutely no waste. Zero waste is a long-term target on the journey we have to start today. While the ultimate goal is to minimize waste as much as possible, achieving zero waste in the strictest sense is incredibly challenging, if not impossible, in today's societies.

Zero waste is about making conscious choices to reduce waste in every aspect of our lives. This involves designing out waste from the product inception stage, creating reuse and repair models, and safely recycling products that cannot be reused. While some might believe this transition to be inconvenient or costly, it can actually save money in the long run, by reducing the need for disposal services and limiting the costs linked to nature destruction and negative health impacts.

The focus should be to consistently reduce our waste footprint. Achieving zero waste is a continuous journey and a useful vision to aim for.

**MYTH 2: Zero waste is all about recycling**

While recycling is an important component of waste reduction, let's keep in mind that today, less than 20 per cent of waste is recycled each year. Most waste still finds its way into nature or the world's landfills and dumpsites. Without any drastic changes, it is projected that by 2050 the amount of global waste generated will increase by 70 per cent compared to 2016 levels.

There is simply no way that we can recycle our way out of this crisis. Instead, we must turn off the tap at the source – and that is exactly what zero waste is about: preventing waste generation in the first place, reusing materials, and redesigning products and processes to minimize waste.

**MYTH 3: Zero waste is for individuals, not businesses**

The responsibility of reducing waste is often framed as a lifestyle choice for individuals. However, businesses have a significant impact on waste production and can make substantial contributions towards a zero-waste future.

Government policies can encourage businesses to adopt a holistic approach to zero waste by promoting product design that prioritizes durability, repairability, and reuse. They can also mandate waste reduction targets for businesses and encourage them to adopt sustainable practices. Businesses can implement zero-waste strategies by designing waste out from the get-go, reevaluating their supply chains, reducing packaging waste, and partnering with suppliers that prioritize sustainability.

Achieving zero waste requires the collective effort from governments, businesses and citizens. With the right policies and business practices in place, we can realize this important vision and create a cleaner, greener, healthier planet for all.

Source: UNDP

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Photograph: Unsplash/Antoine Giret

## HOW CAN SUSTAINABLE DEBT SUPPORT CHINA'S ENERGY TRANSITION?

Sustainable debt has become a popular tool to fund green and sustainability-linked activities since it first emerged in the mid-2010s, providing a tailwind to clean energy investment. Sustainable debt issuances can take several forms. Green, social, sustainability and transition bonds are all considered "use of proceeds" bonds, whereby the funds raised are allocated to pre-defined activities or projects, often outlined in a guidance document known as a taxonomy. They also generally come with strict reporting and verification requirements.

More recently, sustainability-linked bonds (SLBs) have emerged as a more flexible means to access the green debt market. SLBs have a unique structure whereby the interest paid to bondholders can vary based on the issuer's achievement of certain sustainability targets, such as reducing emissions intensity or absolute emissions. Unlike use of proceeds bonds, they are not tied to specific activities or projects. This flexibility means they have been favoured by carbon-intensive industries that need to finance transition activities more broadly, as well as by sovereign issuers, since public finance management practices, sometimes enshrined in law, may preclude the use of funds for a specific purpose.

The People's Republic of China (hereafter China) has emerged as one of the fastest growing adopters of sustainable debt instruments. Most of the growth to date in the Chinese market has been driven by green instruments, which accounted for just under 70 per cent of sustainable debt issuance in 2022. The vast majority of these issuances are bonds, which reached RMB 875 billion (USD 120 billion) last year. This makes China the world's second largest market for green bonds behind the United States, a position it has held since 2021. And there is still substantial room for further growth. The drivers of growth in China's sustainable debt market, as well as the beneficiaries, look different than in OECD economies, where sustainable finance tends to be the domain of the private sector. In China, meanwhile, state-owned banks have facilitated much of the rapid expansion in the market, providing indirect financing for prominent firms across the energy, power and industrial sectors, many of which are state-owned. Banks in China account for 45 per cent of activity across all sustainable debt categories, compared with only 20 per cent in OECD economies.

Another notable difference is that in China's onshore market, the "greenium" is largely absent, according to analysis from early 2023. This is likely the result of an oversupply of green opportunities. While policy banks and state-owned enterprises have driven the rapid rise in issuance to meet China's carbon neutrality targets, this has not been met with rising interest for buyers, reducing pricing benefits.

There are broader lessons to take from the swift growth in China's sustainable debt market, even with its unique characteristics. The lack of a "greenium," for example, means robust government policy has played a major role in the market's development – an important takeaway for other markets in which this trend emerges.

The Chinese government supported the launch of the domestic green bond market when the People's Bank of China (PBOC) and six other government agencies issued the Guidelines for Establishing the Green Financial System in 2016. Since then, the development of the market for green, sustainable and transition finance instruments has been driven by strong policy support.

However, there are still challenges to overcome in the regulatory environment.

Source: IEA



Photograph: Unsplash/Luo Lei

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## RENEWABLES JOBS NEARLY DOUBLED IN PAST DECADE, SOARED TO 13.7 MILLION IN 2022

Worldwide employment in renewable energy reached 13.7 million in 2022, an increase of one million since 2021 and up from a total of 7.3 million in 2012, according to a new report by the International Renewable Energy Agency (IRENA) and the International Labour Organization (ILO). The tenth edition of Renewable Energy and Jobs: Annual Review 2023, is the product of a continuing collaboration between the two agencies.

The report found that renewable energy is attracting increasing investment, leading to job creation in a growing number of countries. However, as in previous years, most of the jobs are concentrated in a few states, notably China, which accounts for 41 per cent of the global total. Brazil, European Union (EU) countries, India and the United States of America (USA) were among the others. Together they represent the majority of global capacity installations and play key roles in the manufacturing of equipment, engineering and associated services.

Solar photovoltaics (PV) was once again the largest employer in 2022, the Annual Review found, reaching 4.9 million jobs, more than a third of the total workforce in the renewable energy sector. Hydropower and biofuels had similar numbers of jobs as in 2021, around 2.5 million each, followed by wind power with 1.4 million jobs.

Francesco La Camera, IRENA Director-General, observed that "2022 was another outstanding year for renewable energy jobs, amid multiplying challenges. Creating many more millions of jobs will require a much faster pace of investments in energy transition technologies. Earlier this month, the G20 leaders agreed to accelerate efforts to triple global renewables capacity by 2030 aligned with our recommendations ahead of COP28. I call on all policy makers to use this momentum as an opportunity to adopt ambitious policies that drive the needed systemic change."

ILO Director-General, Gilbert F. Houngbo, said, "To seize the significant opportunities to attain full, productive and freely chosen employment, social inclusion and decent work for all during these complex transitions, there is a need to develop and implement specific policies for inclusive macroeconomic growth, sustainable enterprises, skills development, other active labour market interventions, social protection, occupational safety and health and other rights at work, and find new solutions through social dialogue."

The quality of jobs matters as much as their quantity, the study notes. To advance social justice, the transition to a cleaner energy future needs to be just and inclusive for all; workers, enterprises and communities. Hence, coherent and integrated frameworks are indispensable, with a focus on wages, occupational safety and health and rights at work, and based on effective social dialogue. The ILO's Guidelines for a just transition towards environmentally sustainable economies and societies provide a central reference for policy making and actions to support a just transition that governments and other stakeholders can draw upon.

A just and inclusive energy transition must also pursue workforce development and diversity. The report highlights the need to expand education and training and increase career opportunities for youth, minorities and marginalised groups. Greater gender equity is also essential. At the moment, jobs in renewables remain unequally distributed between men and women. Currently, solar technology has the best gender balance compared to other sectors, with 40 per cent of jobs held by women.

Source: IRENA

Photograph: Unsplash/Antonio Garcia

## IN TANZANIA, COMMUNITIES SAVE MONEY TOGETHER TO BUILD A BRIGHTER FUTURE

In southern Tanzania, women are working together to save money, access small loans, and obtain emergency funding for medical or other crises.

Known as Village Savings and Loan Alliances (VSLAs), these models are an integral component of the CARE-WWF Alliance, a partnership that champions the power and resilience of women, communities, and ecosystems so current and future generations can thrive. They are self-managed groups of individual members from within a community who pool funds together.

Regular VSLA meetings also play another critical role: drawing the communities together and furthering more of the Alliance's mission. While they are gathered to deposit their savings and discuss their finances, people also feel encouraged by the Alliance to discuss and problem-solve around landscape restoration, the value of businesses that do not harm the environment, and agriculture practices that help mitigate the impacts of climate change.

These discussions contribute to the successful implementation of the other Alliance programming that supports villages in protecting their natural resources and helps small-scale farmers and producers build the skills they need to increase production, improve resilience, adapt to climate change, diversify diets, and boost nutrition.

Lilian Mkusa has been the VSLA project coordinator for the Alliance in Tanzania since the program began in 2008. In this role, she helps the communities start their programs, provides financial and savings training, advises on business startup options, and helps ensure the active participation and leadership of women in the groups.

Source: WWF

## EU PACKAGING WASTE GENERATION WITH RECORD INCREASE

From parcels for online purchases to coffee-to-go cups, packaging is almost everywhere. In 2021, the EU generated 188.7 kg packaging waste per inhabitant, 10.8 kg more per person than in 2020, the biggest increase in 10 years, and almost 32 kg more than in 2011.

In total, the EU generated 84 million tonnes of packaging waste, of which 40.3 per cent were paper and cardboard. Plastic represented 19.0 per cent, glass 18.5 per cent, wood 17.1 per cent and metal 4.9 per cent.

In 2021, each person living in the EU generated an average of 35.9 kg of plastic packaging waste. Out of this, 14.2 kg were recycled. Compared with 2020, both plastic packaging waste generation and recycling increased: generation increased by 1.4 kg per capita (+4.0 per cent) and recycling by +1.2 kg per capita (+9.5 per cent).

Between 2011 and 2021, the amount per capita of plastic packaging waste generated increased by 26.7 per cent (+7.6kg/per capita). The recycled amount of plastic packaging waste increased over the same period by 38.1 per cent (+3.9 kg/per capita).

This information comes from data on packaging waste published by Eurostat today. The article presents a handful of findings from the more detailed Statistics Explained article.

### Plastic packaging recycling rate up to 39.7 per cent in 2021

Following stricter rules, implemented in 2020 for Member States to report their recycling, the recycling rate shifted from 41.1 per cent in 2019 to 37.6 per cent in 2020. In 2021, the recycling rate was back to an increasing path, marking 39.7 per cent. In 2021, Slovenia (50.0 per cent), Belgium (49.2 per cent) and the Netherlands (48.9 per cent) recycled half, or almost half, of their plastic packaging waste generated. In contrast, less than one-quarter of plastic packaging waste was recycled in Malta (20.5 per cent), France (23.1 per cent) and Sweden (23.8 per cent).

Source: Eurostat

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Photographs: (left) Unsplash/Polina Koroleva; (right) Unsplash/Mediamodifier

# EMPOWERING LOCAL COMMUNITIES – PANEL BY PANEL TO POWER PLANT

In light of the development of the modern energy sector, Elektropionir – an energy cooperative formed around 2019 – has become a beacon for people who are actively looking for a better position in this sector. The cooperative's team raises awareness of the challenges that individuals, as natural persons, face when trying to produce their own electricity. Through its members' personal insights and experiences, Elektropionir identified disharmony in the legal framework, which did not recognize individual electricity producers as an integral part of the extensive power grid. Then, a slight change happened, illuminating the path towards creating a mechanism to introduce the community into a collective energy enterprise. Jelena Nikolić, a doctoral candidate in energy management and a member of the Elektropionir Energy Cooperative, elaborates on the cooperative's work and its most renowned project.

Following the cooperative principles, this cooperative is a legal entity that strategically organizes its members while promoting voluntary and open membership, democratic organization (one member/one vote), economic participation of all cooperative members, inter-cooperative cooperation through participation in the European umbrella organization of energy cooperatives – REScoop – as well as autonomy in business. Education has always been the central pillar

of this cooperative, focusing on sharing knowledge and educating people on vital issues.

"During our Solartehnika course, we try to pass on everything we know to the nation and share the experience we have gained. So far, we have held six courses, each different from the previous one. The period between the two courses brings new knowledge and a different approach, so each Solartehnika course is better than the previous one. So far, more than 250 participants have attended them," Jelena Nikolić points out.

Elektropionir has opened a new chapter in sustainable energy in Serbia with their immersion in the Solarna Stara project, initiating the idea that ordinary people, united and determined, are powerful drivers of change in the energy transition. The project demonstrates that the responsibility for setting up a power plant does not have to be concentrated exclusively in the hands of large investors. Namely, when local communities unite, they can produce their own electricity and advocate for a just energy transition through action and common ownership of clean energies. The project was launched in the spring of 2022 in cooperation with the people from the old mountain villages of Dojkinci and Temska and the city of Pirot. Still, it was designed and implemented under the auspices of the Elektropionir Energy Cooperative.

It laid the groundwork for the country's first cooperative solar power plants, setting the standard for future initiatives. The financial resources



Photograph: Elektropionir

When local communities unite, they can produce their own electricity and advocate for a just energy transition through action and common ownership of clean energies

required for the project's implementation were partially raised within the cooperative, that is, half of the needed money. At the same time, additional funds were generated by the public, responding to the donor campaign launched in July 2022, which not only reached but also exceeded the targeted budget. In July 2023, solar panels were installed on the rooftops in both villages. The funds obtained from the sale of the electricity that the Stara Planina solar power plants will produce will be reinvested in the local community over the next 25 years, supporting and boosting projects and the overall community, further validating an inclusive future in energy.

In terms of future projects and goals, two cooperative power plants are planned – one on the rooftop of an elementary school and the other in cooperation with the agricultural holding, where we plan to apply the agrovoltaics concept, i.e. using solar panels in combination with agriculture to improve the production process. School panels are a particularly good idea because, in addition to parents actively contributing to their children's future, they promote the spirit of togetherness.

In times of global and local energy challenges, Elektropionir practically demonstrates that the solutions are found in solidarity, innovation, and local action, thus inspiring other communities in Serbia and wider surroundings.

Prepared by: Milica Vučković

Jelena Nikolić

**doctoral candidate in energy management and a member of the Elektropionir Energy Cooperative**

## OBSTACLES

After the successful implementation of the Solarna Stara project, a model for cooperative investments is now being developed. The idea is that several citizens invest funds to build joint power plants. As Jelena Nikolić points out, they have been working on this for some time, but bureaucracy and paperwork remain the biggest obstacles. For instance, waiting to be issued with the design and connection permit (the infamous UPP document), which is required for the aforementioned cooperative power plant to be built, has lasted over a year.

Photographs: Elektropionir; (Nikolić) courtesy of Jelena Nikolić

# SUSTAINABLE BUSINESS FOR REDUCING THE ENVIRONMENTAL FOOTPRINT

The Alumil Company is a leader in the production of aluminum profiles; while using state-of-the-art technology and operating in line with the circular economy model, they fulfil their mission of sustainability. We spoke with Ivana Petronijević, an architect consultant in Alumil, about the advantages of different products, creative processes, adaptability to living space, innovative production lines and investments in environmental protection.

**Q: Alumil has a comprehensive product range of different window and door systems. What are their most important features, and what could you tell us about the functionality of these products?**

A: Aluminum is an extremely formable material and ensures the production of very durable and, at the same time, minimally visible dimensions in the built-in position. Also, the geometry of our aluminum profiles ensures the installation of advanced thermal breaks, as well as glass units of different thicknesses, which promotes the high thermal performance of the positions as a whole. During the production process, starting from the selection of quality raw materials through the expertise of our employees at the production facilities, we rely a lot on our research and development team, who follow the latest architectural trends, and on the internal quality control of our products. We install tools that expedite system production, and we are also actively cooperating with international institutes to certify our products. Today's technology makes it possible to find solutions for large-dimension openings, as well as openings with atypical shapes, thus providing a solution to even the most demanding architectural projects.

**Q: Which product would you highlight in particular? How do they contribute to the comfort of staying on the premises?**

A: As a company with a very wide product portfolio of sliding systems for different types of buildings, we diverged all our products into SUPREME, SMARTIA and COMFORT product lines. The SUPREME and SMARTIA categories comprise aluminum

### VALIDATION OF SUSTAINABILITY

Alumil is one of the very few companies worldwide that is the recipient of the prestigious OK Recycled certificate by TÜV AUSTRIA. This certificate confirms our commitment to sustainability and the production of logs with 60 per cent recycled aluminum, which are used in all profiles of the company's architectural systems.



Photographs: Alumil

systems with thermal breaks, while the COMFORT segment comprises systems without thermal breaks. Regarding the SUPREME and SMARTIA product lines, I would like to highlight PHOS sliding systems, known for their minimalist design. The word 'phos' is Greek and means 'light'. We chose it because it best describes these products, which, thanks to the extremely minimal dimension of the visible aluminium, allow much more natural light into the space, as well as an uninterrupted view and panorama. PHOS systems provide maximum comfort, and in addition to aesthetics, they have a high load capacity, which enables the glazing of large openings.

We have invested 4.6 million euros in establishing a state-of-the-art sorting and processing aluminum waste unit at our facilities in the Kilkis Industrial Zone

**Q: What kind of glass would be the best fit for these kinds of doors and windows?**

A: The thickness, type, and number of panes in the glass unit are calculated according to Uw calculations and following the regulations for the appropriate climate zone in the country. A wide selection of glass types is available in the market today, which makes it possible to achieve appropriate performance even with double-layered glass. It is especially important to remember that the dimensions of sliding openings are usually more than 2.2m wide, very often with heights over three meters, which means that the wings are quite heavy and need profiles that can stand such load, in addition to appropriate moving mechanisms.

**Q: When creating such door and window systems, how concerned were you with the views that such systems can provide so the users can fully enjoy the beauty of the surrounding environment?**

A: The products from our product portfolio are designed so that they can respond to different needs of people. The possibility of manufacturing aluminum systems for windows and doors of different shapes and typologies creates great opportunities for users in terms of interior decoration, especially when choosing the color of profiles and equipment. In our production facilities, we also have lines for powder-painting profiles, i.e. plasticizing, as well as an anodizing facility. The painting is done with certified powders, and the paint is chosen by the designer or the user from the RAL map. It does not majorly affect the price of the final positions, which is a very important segment when deciding on aluminum doors and windows.

Ivana Petronijević
**architect consultant in Alumil**

**Q: Are your products suitable for recycling, and what is the best way to dispose of such waste when the time comes?**

A: Our company understands the importance of sustainable development, and we follow the research conducted on this topic in the rest of the world and Serbia. Nowadays, due to the energy crisis, we focus on sustainability and energy efficiency, so we strive to contribute to the reduction of the negative environmental footprint, starting from the production process through the creation of a new product. In line with our commitment to environmental protection, we have invested 4.6 million euros in establishing a state-of-the-art sorting and processing aluminum waste unit at our facilities in the Kilkis Industrial Zone. For instance, after dismantling old aluminum windows or parts, contractors transport and dispose of those parts, and then they are transported to our factory for recycling.

# ANOTHER SUCCESSFUL EDUCATIONAL MEETING OF ENERGETIK ENERGIJA D.O.O. WITH THE PRODUCERS

Energetik energija d.o.o. recently hosted a highly anticipated educational meeting with their valued partners/producers, Sungrow and K2 Systems.

The agenda for the educational meeting was structured to enable deep research into the latest trends, technological advancements, and best practices within the photovoltaic sector. It included an exploration of the entire Sungrow portfolio, from inverters, batteries, and new optimizers, completed with the announced presentation of the new version of the iSolarCloud application, so again, attendees had an opportunity to find out the latest news first-hand and get answers to any of their questions. In the end, K2 Systems provided insights into the latest developments, including three new construction options available within Energetik energija's offerings.

Riccardo Frisinghelli, CEO of Energetik energija d.o.o., unveiled the next major project: a brand-new B2B platform and website that will revolutionize the user experience and take it to the next level

At the already successful educational meeting, Riccardo Frisinghelli, CEO of Energetik energija d.o.o., unveiled the next major project: a brand-new B2B platform and website that will revolutionize the user experience and take it to the next level.

## A step ahead in user experience

Energetik energija's forward-thinking approach takes center once more with the launch of the B2B platform. This platform is designed to completely transform how businesses interact, offering a high level of convenience, accessibility, and valuable insights.

## Direct access to stock information

One of the platform's standout features is its ability to provide direct insights into Energetik's stock availability. It means no more guesswork and uncertainty—users can instantly access real-time stock data. This amazing feature gives users the information they need to make informed decisions and en-



Photographs: Energetik energija

sure they get the products they want exactly when needed. So precise planning and deadlines will not be an issue anymore.

## Notifications—only click away

Imagine being the first to know about upcoming products, not just upcoming but on stock. With the notification system of the B2B platform, users will have the option of receiving restock notifications of desired products and much more.

## Transparent price information

Transparency is the foundation of trust, and Energetik energija understands this in all its importance. The B2B platform offers complete pricing information that allows users to access clear and up-to-date prices for all products. No hidden costs, no surprises.


With the notification system of the B2B platform, users will have the option of receiving restock notifications of desired products and much more

## Easy ordering

What makes the platform stand out is its effortless ordering feature. Users can easily place orders anywhere, anytime, with just a few clicks. Whether you're in the office, on the roof, at the client, or in the comfort of your home, customers now will enjoy ordering freedom that allows them to order at their convenience. This feature helps to plan and predict deadlines. Simply put, the faster the installer gets the product, the sooner the job is done, and there is more time for new projects.


The platform will be accessible only to registered users

## Only for registered users

Energetik energija's commitment to improving the user experience and simplifying the buying process proves their commitment to customer satisfaction. The platform will be accessible only to registered users.

It will benefit every user with direct insights into stock, notifications about coming products, pricing, and ordering from anywhere and anytime.

Before launching the platform, Energetik energija will inform all existing clients to register and enjoy features created for their needs.

"As always, our passion for customers is reflected in every segment of our work and inspires us to raise the standards of our mutual interaction in successful cooperation with every customer or enthusiast in the renewable energy sector", they say from the company.

Energetik energija

# POWER OF SUSTAINABILITY FESTIVAL 2023 – TOWARDS A SUSTAINABLE FUTURE

The two-day Power of Sustainability Festival 2023 in Mostar, organized with the support of the Foreign Investors Council in Bosnia and Herzegovina (BiH) and Intera Technology Park, in cooperation with the Mostar authorities and the Federal Ministry of Environment and Tourism of BiH, gathered more than 150 experts, investors and decision-makers from the private and public sector. The festival, which was held from September 21 to 22, focused on four key themes, which were addressed through keynote presentations and panels.

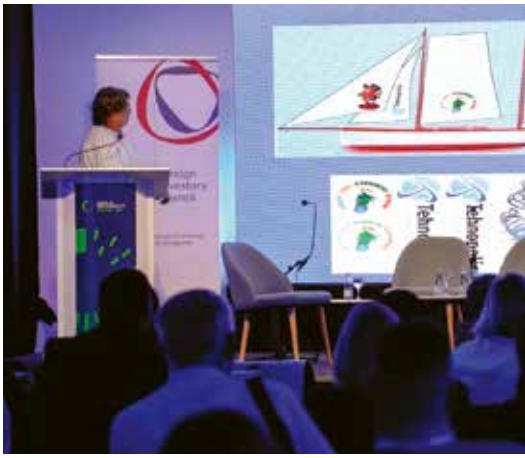
The first day was dedicated to investments in green energy, implementation of the circular economy, ESG standards and electromobility, while sustainable tourism was the main topic of the second day.


## Development of electromobility

A panel discussing electromobility proved to be very popular with the audience. Musician Antonije Pušić, a.k.a. Rambo Amadeus, talked about his solar-powered sailing boat and how he developed a project that entailed investment in green energy, with the application of circular economy, electromobility and sustainable tourism. Humorously and endearingly, Pušić described how he selected his sailboat, recounted how he started his project and found the right collaborator who supported him in its implementation.

Miloš Kostić, director of the company MT-KOMEX, a leader in the construction of solar power plants, fondly looked back on 2018 when Antonije came to the meeting where they discussed and planned how to install solar panels on the ship.

Pušić, who is an environmental activist and a public figure, wants to encourage other people to promote low-carbon nautical tourism. He

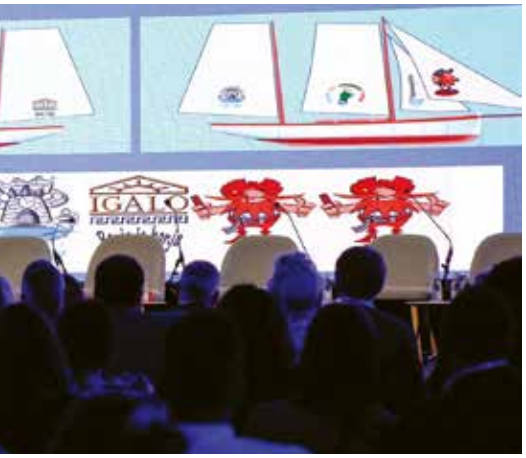


Photographs: Ivan Bošnjak


ultra-fast chargers in Serbia, 64 of them. He also underlined that these chargers are located on busy roads, corridors and OMV petrol stations, which have chargers of up to 240kW in power.

## With energy transition to carbon neutrality

When it comes to investments in green energy, the need for better alignment of laws and policies with the market needs was dubbed as crucial.


The festival, which was held from September 21 to 22, focused on four key themes, which were addressed through keynote presentations and panels

hopes that this type of tourism will become a trend to enjoy, where people will forget about motor speedboats and yachts that pollute the sea with noise and oil.

Sandro Zovko, director of the ZGI Company, spoke about Bosnia and Herzegovina's electromobility strategy and how by 2050, 80 per cent of the total rolling stock should be electrically powered. Mirela Sidro explained how important it is to preserve the environment and natural resources in Bosnia and Herzegovina and how to promote all this with the help of electromobility. She comes from Germany, is an electromobility expert and was the first to bring an electric car to BiH and make TV reports about it, thus encouraging others to do the same.

When it comes to the obstacles to encouraging people in this country to buy electric cars, Ms Sidro noted very long procedures that could last for a year and a half, problems with loans and other problems.

Miloš Kostić also spoke about electromobility in Serbia and the development of the Charge&GO Company. He pointed out that Charge&GO currently has the largest network of

The festival participants agreed that it is necessary to increase the focus on the transparency of institutions and private investors and increase the direct benefits for local communities to attract investors following the example of Norway and other countries that have used a similar approach. It was also pointed out that Bosnia and Herzegovina's goal is to become carbon neutral by 2050, that changes should be instigated as soon as possible and that we should implement just transition.

On behalf of the Festival's organizers, Sanja Miovčić, Director of the Foreign Investors Council of of Bosnia and Herzegovina, said that she was proud of the fact that so many outstanding individuals gathered in Mostar for whom sustainable business was not only the future but also the present.

The positive reactions of the participants and organizers indicate that the conference will become a tradition and that it will be held next year, continuing to promote sustainable development, smart solutions and the exchange of ideas for a better future.

Prepared by: Milica Radičević

# FROM STADA EXPO TOGETHER INTO A SUSTAINABLE FUTURE

The Hemofarm company presented a unique STADA EXPO multimedia platform dedicated to sustainable development. STADA EXPO was premiered in Vršac, and before going on a European tour, Hemofarm employees already had the opportunity to see through interactive displays how STADA cares about a sustainable future.

They also saw how each individual can influence a better future. From the first moment of encountering the multimedia exhibition, one gets a broader picture of how we can all contribute to a sustainable future together. In addition to the presentation of the latest Report on the sustainable development of the Hemofarm company, STADA EXPO introduces us to the importance of the interconnectedness of the entire community in preserving the planet.

Ronald Zeliger, general director of Hemofarm, assessed that this

STADA EXPO was premiered in Vršac, and before going on a European tour, Hemofarm employees already had the opportunity to see through interactive displays how STADA cares about a sustainable future



Photographs: Hemofarm

company is not only a market leader in Serbia and the region but also a leader in sustainable development, which today is proven in an unusual way through the STADA EXPO project. The main challenge of the 21st century that we all face is how to solve the many problems that have piled up, from the climate crisis to inequality.

Sanda Savić, senior director of corporate affairs and communications at Hemofarm, said that, "STADA EXPO was created to give visitors a complete experience of what sustainable development is in action and what it means when a pharmaceutical company cares about the future."


## HEMOFARM – A RELIABLE PARTNER

- Solving accumulated problems, from the climate crisis to inequality, will require us to cooperate to achieve a sustainable future for all. And so we must unite in our mission to build a future that is sustainable and just. For the sake of our children and our planet, we must act now! Hemofarm has been working on sustainability for more than a decade, and we are ready to be everyone's partner on that path – said Ronald Zeliger, and pointed out that everything Hemofarm has done in the past 62 years and continues to do is because it cares about people's health as a reliable partner.


— We want to motivate every individual to take the first step towards change with us. It is a unique invitation to everyone so that as many people as possible join us in building a better world. The most important message is that each of us can help, and each contribution is important. I hope that such a multimedia project, such as the STADA EXPO, will be an inspiration for changes on a personal level, as well as within society – said Sanda Savić.

Dušan Stojaković, senior manager of global sustainable development of the STADA group, presented the results from Hemofarm's latest Sustainable Development Report.

— We are presenting our Sustainable Development Report for the 11th year in a row, and there is no better way to mark the entry into the second decade with STADA EXPO. The Report for 2022 confirms our progress in all ESG aspects, with a focus on good health and well-being, responsible production and consumption, dignified work and the creation of partnerships, Stojaković pointed out.

The STADA EXPO mobile and multimedia exhibition will start its tour in Vršac. Then, it will travel to other European countries and will finally end in Serbia, where it will be available to the general public.

Hemofarm

# THE CIRCULAR ECONOMY IN THE OIL INDUSTRY: REDUCTION OF RAW MATERIALS, WASTE AND EMISSIONS

According to the official data posted on the website of the European Parliament, 2.2 billion tonnes of waste are generated in the European Union each year. More than a quarter of it includes municipal waste: everyday waste that is collected and treated by municipalities, mainly produced by households. To reduce waste and its impact on the environment, the EU has adopted ambitious targets leading to a more sustainable model known as the circular economy.

## What does the circular economy entail

In practice, this implies reducing waste to a minimum. When a product reaches the end of its useful life, thanks to recycling, the resources it contains are reused, thus creating added value. Reusing and recycling products is important to slow down the consumption of natural resources, reduce environmental damage, and preserve biodiversity. Creating more sustainable products reduces energy and resource consumption and thereby the total annual greenhouse gas emissions, increases competitiveness, encourages innovation and creates new jobs.



Photographs: NIS

## Economically and environmentally sustainable development model

In addition, switching to reusable products reduces the amount of waste. Packaging is an increasing problem; the average European person produces almost 180 kilogrammes of packaging waste annually.

The circular economy is not a new topic in Serbia either. The contribution to this concept is best illustrated by the example of our largest oil company—NIS. Namely, NIS explains that the company, as a packaging filler and supplier that places packaging on the market, hired an operator responsible for the packaging waste management system that holds a license for performing this activity. All packaging waste that was picked up and collected in 2022 was re-used, recycled, or disposed of during the current year, in order to meet the national objectives set for 2022.

Thus, in 2022, 111 t of paper, 18 t of PET packaging, and 10 kg of cans were handed over for recycling in NIS, which saved 1,887 trees, 36,090 litres of fuel, 3,552,000 litres of water, and 574,340 kWh.

Another of the goals that the company strives for is the constant reduction of the share of fresh water in the total amount of water used in business processes. At the Pančevo Oil Refinery, for example, thanks to the recovery of condensate, water is re-circulated, which achieves the effect of reducing the intake of fresh water by about 20 per cent.

An important fact is that, just during 2022, NIS contributed to a healthier environment in Serbia by investing in environmental projects in the amount of almost RSD 315 million. All relevant data on this topic were presented within the 13th verified Sustainable Development Report, published by NIS under the symbolic slogan "Our Sustainable Community".

## Operating according to global standards

NIS is the industry leader in the field of sustainable production and recycling, and it introduces good practices in its business. At eight oil and gas fields in Serbia, the company has built small power plants, in which electricity and thermal energy are now produced from gas that was previously burned on a flare, and thereby, the emission of harmful gases is reduced. Through the cogeneration program, the thermal energy produced is used for the needs of the NIS facilities, while electricity surpluses are sold on the domestic market.

This oil company also applies a modern environmental method of drilling in oil fields by applying the principle of "dry locations", which is also used by the world's leading oil and service companies. The material obtained during drilling is recycled on the site by separating it into a part that is re-used for drilling and a part that is waste and that is disposed to a landfill where it is stored according to global standards.

In addition, NIS also built the Amine Plant for the natural gas purification near Elemir. The processing method in this plant completely prevents carbon dioxide emissions into the atmosphere, thus reducing the "greenhouse" effect. The extracted $CO_2$ is then injected into the Rusanda oil and gas field, to increase oil utilization, which is another contribution of this company to the circular business model.

NIS

NIS is the industry leader in the field of sustainable production and recycling, and it introduces good practices in its business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# CIRCULAR ECONOMY AND BANKING

The circular economy puts an end to the concept of "exploit – produce – use – throw away". As it usually happens, we became aware of climate change, the incredible amount of waste surrounding us and the terrible pollution only when the situation became alarming. The circular economy's mission is to rethink what waste is and whether waste can be further used as raw material. But the circular economy does not stop there – it insists on the systematic application of the so-called 3R principles – recycle, reuse, and reduce the use of resources. The circular economy is the answer to the call to think, pay attention to our surroundings and realize that we must use resources more rationally.

## Circular economy in the banking sector

"It is probably too early to assess the banking sector's role in implementing the circular economy in Serbia. Progress toward sustainable business and the implementation of ESG standards certainly exists. However, the transition to the circular economy will be demanding and long-lasting. We at ProCredit Bank believe that we will motivate companies to invest in environmentally responsible and sustainable business through more attractive financing conditions for green projects and by personal example," said Dragan Reščik, Head of the HR and Marketing Department at ProCredit Bank.

In cooperation with the GEFF, ProCredit Bank offers up to 20 per cent refund of funds spent on green projects. Still, at the same time, it is guided by a list of excluded activities, and by the estimated impact on the environment and sustainable development, it carefully selects the projects it finances. Furthermore, ProCredit advisors provide a full set of services for business clients. Through continuous training, they are fit to be advisors to companies in the truest sense of the word and offer solutions for boosting energy efficiency according to the client's business model.

> We have installed smart metres and sensors in all our facilities. We always know how much water and electricity we use; if an accident occurs, we can react immediately

"Green energy and responsible management of resources are, unfortunately, not the cheapest option in the short term. However, their long-term return and social importance compensate and greatly exceed the investment. With expertise, an individual approach and many years of experience, our advisors have managed to empower clients to think seriously about the latest waste management solutions, and we are proud that our portfolio includes companies that recycle plastic, metal, and other waste, as well as do composting," Mr. Reščik added.

Adaptation implies that ProCredit Bank employees think twice about whether they should print something, whether they closed the window when turning on the air conditioner and how they treat the resources at their disposal.

"We have installed smart metres and sensors in all our facilities. We always know how much water and electricity we use; if an accident occurs, we can react immediately. Without these sensors, we would have to wait for the next electricity or water bill to see that something is wrong or that the damage is visible to the naked eye," explains Stanislava Milošević from the Energy Efficiency and Environmental Protection Department, which has been with the Bank for ten years.

Sustainability also brings some completely unexpected challenges. Dragan Reščik gave a good example from practice: "During the planning of ProCredit Bank's sustainable development and green economy conference called Change to Green, common sense forced us to order a printed PVC wall and plastic ID cards for the participants. However, it is clear that single-use plastic cannot be reused. And then we decided to cross out those items."

Change, therefore, begins with all of us and maybe with things that don't seem crucial. However, it is important to understand why it is so significant to treat resources responsibly because our survival depends on their survival.

ProCredit Bank

Photograph and ilustration: ProCredit Bank

# MLEKOMAP: FRESH MILK AT YOUR FINGERTIPS

In the heart of Serbia, a team of enthusiasts revived an idea that brings together small milk producers and consumers in quite a unique way. This project is called Mlekomap, designed as a non-profit platform to connect milk producers and customers, who can now purchase readily available, fresh, homemade milk. Aleksandar Džavrić, software engineer and visionary of this project, came up with this idea in early 2023 and, with the support of Miloš Jovanov and his company Green Friends, started implementing the project.

Mlekomap has many advantages for both parties. With the help of their map, a buyer is informed of the locations of registered farms that produce dairy products. By contacting nearby farms, customers can further communicate with the dairy farmer regarding their purchase.

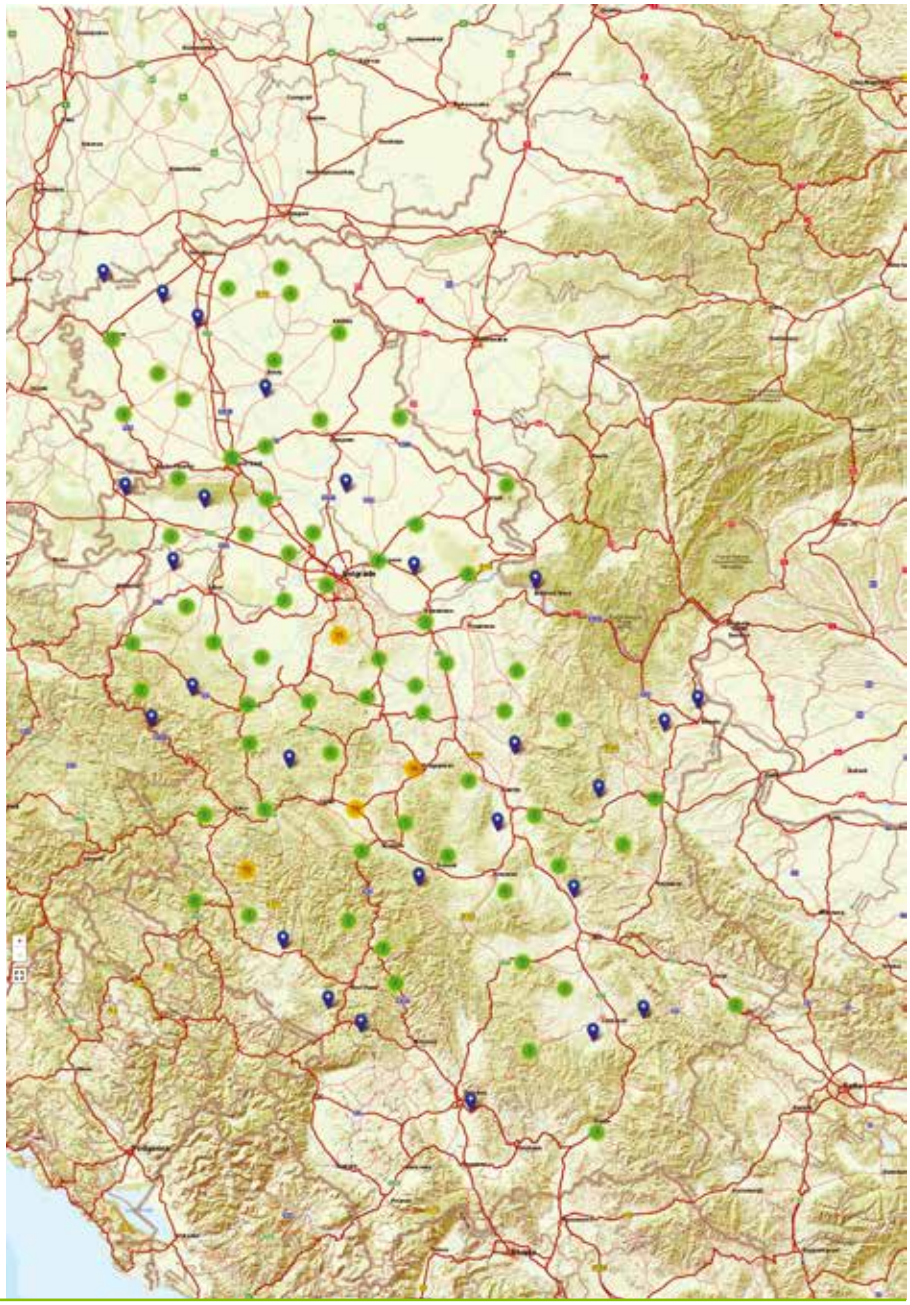
> The registration process is simple – the farm registers itself by filling out the form available on the Mlekomap platform, followed by Mlekomap's team checking the submitted information and finally adding the producer to the map

The registration process for producers is simple – the farm registers itself by filling out the form available on the Mlekomap platform, followed by Mlekomap's team checking the submitted information and finally adding the producer to the map.

"As for the price and quality control, it is a matter of agreement between the buyer and the seller. If



Photograph: Pixabay/Congerdesign



the buyer has a complaint against the seller, we immediately check it and react as required, although we haven't had such cases so far. We have received only praise", Aleksandar Džavrić says.

The map itself has no territorial restrictions if it complies with the relevant laws in the country in which the sale takes place. Dairy farmers in the region are facing the same difficulties as dairy farmers in Serbia. If this project can revitalize local family businesses, a farm and even a village, the idea of expanding it to the region, if the laws allow, sounds great.

In Serbia, in addition to hundreds of farms, there are several registered milk machines. The milk machines are automated devices designed to sell fresh milk directly to consumers without intermediaries. These devices are often located in central parts of cities and allow consumers easy access to fresh milk without the need for direct contact with the producer.

However, it is not that easy or cheap to get, which is why many farms still opt for direct sales. Milk machines are available 24/7, meaning consumers can buy milk whenever needed, regardless of business hours.

Besides being very practical, they allow producers, mostly local farmers, to market their products directly. This business principle creates more stable incomes and better conditions for the marketing of their products but also promotes the development of local economies. The freshness of the milk is guaranteed, with, of course, the hygiene of the machines regularly maintained. It is very important to bring your own bottles when using the milk machine, preferably glass ones, which reduces the use of plastic and hence the generation of waste. This way, we can reduce the huge amount of waste and plastic required for bottling.

Currently, Mlekomap has about a dozen registered milk machines located throughout Serbia, from Kruševac and Sombor to Čajetina and Kragujevac. These machines are also available in Belgrade, Čačak and Arandjelovac. The project has also reached ~350 farms, and that number is slowly growing. The team had several inquiries from neighboring countries about creating maps for their respective region, although they have not yet received the required support from institutions, local communities, or authorities.

The socially conscious character of this project is obvious, and this is an example of a successful domestic innovation that benefits the community, supports dairy farmers, and provides a practical solution for customers. Thanks to Mlekomap, Serbia has opened the door to better support for producers and provides consumers with fresh, top-quality products. The team behind Mlekomap describes their involvement as a process in which they use their technological knowledge to help people who produce food for everyone. In times when technology can often act as a threat to tradition, Mlekomap shows how it can be a tool that will help preserve and improve tradition and communities.

Prepared by: Milica Vučković

Illustration: from the mlekomap.com website

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# LUXOR SOLAR – A RELIABLE PARTNER FOR A SHINING FUTURE

The first solar panels were produced by the Luxor Solar company in 2007. Today, they are a certified manufacturer of solar modules recognized throughout the region. They are the leading company regarding the number of sold solar panels on our market, and they are installed in over 85 countries worldwide. Based on EuPD Research's research among German consumers in the areas of brand awareness, product prevalence and recommendation, Luxor Solar ranks among the best brands in Germany.

Due to its exceptional performance, the company received the EuPD Research SolarProsumerAward©, which places them in the group of top global brands that have the right to carry this label.

## The most wanted models

Monocrystalline solar panels with half-cell architecture, most often with cells M10 N TYPE TopCon with a diagonal of 182 mm power 425/430Wp double glass bifacial in dimensions 1,722 × 1,134 × 30 mm is their standard and most requested model. The experts of this company are also happy to recommend the 570Wp BIF version with dimensions of 2279 × 1134 × 30 mm for larger projects on the roof and on the ground.

They have recently enriched their portfolio with heterojunction cell technology and high-end solar modules. Heterojunction cell technology has several advantages compared to current technologies. Thanks to the application of this new technology, solar modules are more efficient and more durable and guarantee greater efficiency per surface area, as well as throughout the module's lifetime.

Luxor Solar offers its clients the fastest and most flexible solution, a German warranty on each delivered module for up to 30 years on the product and up to 30 years on production. They are always available to clients, both at the head office in Stuttgart and in the region and Serbia.

Luxor Solar offers its customers a German warranty on each delivered module for up to 30 years on the product and up to 30 years on the production

### FLATTERING RECOGNITION

In 2023, Luxor Solar received the certificate TOP BRAND PV Serbia, Slovenia, North Macedonia, Bosnia and Herzegovina, and Greece. This certificate confirms the outstanding contribution of the company to the development of the mentioned markets.



Photograph: Pixabay/Jaidee

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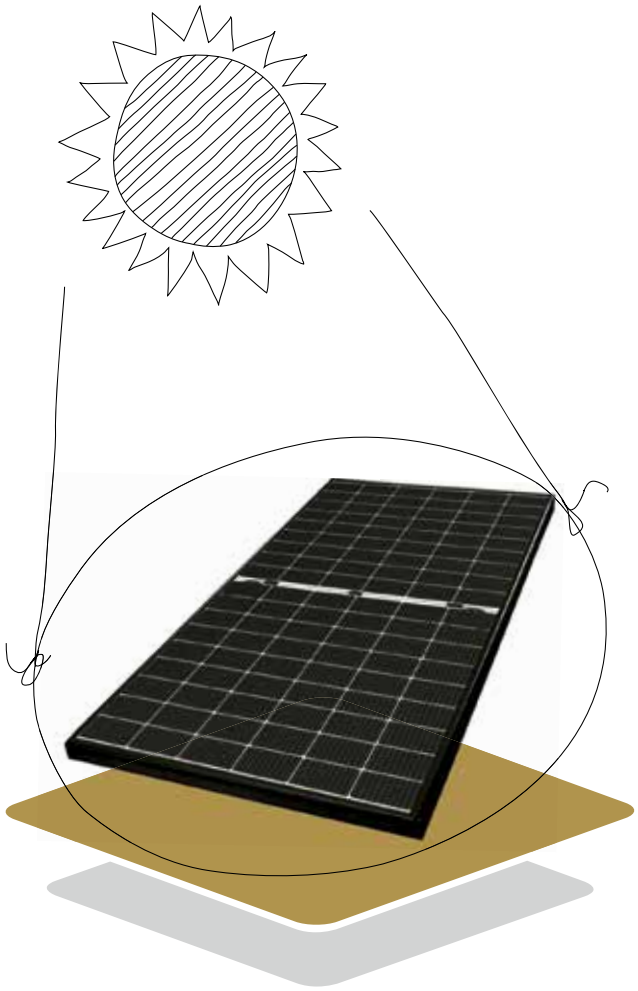

# INNOVATIVE SOLUTIONS LEAD TO THE CIRCULAR ECONOMY

Over the last two decades, ABB's expert teams have upgraded thousands of robots, significantly extending their working life and enabling a more sustainable way of working, which fits into the segments of the circular economy

Modern times have brought us new technologies and innovations that make our daily lives easier. The constant growth and progress of all spheres of life require the use of natural resources that are mercilessly consumed, mostly through the system of the linear economy. This model is based on the principle of take-make-use-throw and has contributed significantly to the accelerated development of industry in the 20th century. Applying this model has led to a harmful impact on the environment and global climate change, the solutions of which we are intensively searching for. Applying the circular economy model, a regenerative approach to production can help in this. It practically means that end-of-life products are either returned, through modular design, to production processes or have the possibility of being decomposed so that they do not harm the environment. Technological production processes applied in the circular economy are based on clean technologies. Namely, materials already in use (recycled) are used, and the product obtained after use is used again in the production process instead of going to waste.

The production process, according to the circular economy model, is rounded into a whole, the so-called waste-free production. Although all this seems easy to implement, only 7.2 per cent of products are currently used worldwide and are returned to production at the end of their life. The principles of the circular economy are



Photographs: ABB

By using new technologies and solutions from the company ABB, it is possible to transform factories to meet all the criteria of the circular economy

applicable in almost all business segments and can significantly improve production processes.

## Robots for a longer working life

The segment in which this business model can be applied in the long term is certainly the extension of the service life of production equipment and machines. The company ABB extends the working life of equipment and devices with its innovative solutions in production processes. In the late 1960s and early 1970s, ABB was the first in the world to promote an industrial painting robot and a robot fully controlled by a microprocessor.

Today, their robots are playing their part in solving the world's sustainability challenges and helping companies in the process of implementing the circular economy. Thanks to solutions that extend the working life of robots and detailed analysis by ABB experts, the causes of overloads are found, and maintenance strategies are recommended. In the industry, thanks to this service, a large car manufacturer identified the robots that were the most stressed and with preventive maintenance actions, as many as 280 robots will continue to work and be in operation until 2035, despite already accumulated 25,000 working hours. Over the last two decades, ABB's expert teams have upgraded thousands of robots, significantly extending their working life and enabling a more sustainable way of working, which fits into the segments of the circular economy.

## Electrification and automation to business transformation

By using new technologies and solutions from the company ABB, it is possible to transform factories to meet all the criteria of the circular economy. ABB did the complete automation of the operations and the quality measurement system and supplied the motors and frequency controllers for a company from Stockholm that developed a new technology in cotton production. They obtain biodegradable pulp from used cotton and other materials with a high percentage of cellulose, and their entire production process meets all the criteria of the circular economy. Thanks to the innovations coming from ABB, their clients, industry and society as a whole have an ecological future. They are also a reliable partner for the Swedish battery manufacturer Northvolt. With the electrification and automation of the factory, they are today the most ecological battery manufacturer in the world. ABB solutions optimize production processes by saving energy, reducing harmful gas emissions and respecting the principles of the circular economy, all to achieve the goals of carbon footprint reduction and climate neutrality.

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# DIGITALIZATION AS A WAY TO IMPROVE ENERGY EFFICIENCY IN BUILDINGS

Digital technologies have become part of a large number of investments in infrastructure and energy projects in developing countries. Their extensive application in cities to increase efficiency, optimization, and improvement of health, comfort, and social circumstances leads to achieving a high level of sustainability. Recognizing the need to follow the current moment, the EBRD teams are increasingly incorporating digitalization into assessing their investment justifications. The project to which the following paragraphs are dedicated brings a paradigm shift in dealing with digitalization as it shows how to apply digital technologies in all types of buildings. The EBRD team that worked on this project included the bank's experts in energy and district heating. At the same time, the external consulting team of E Co. from the United Kingdom and the German Dornier Group consisted of over 10 experts from the USA, Germany, Serbia, Croatia, Italy, and Argentina. From July 2022 to June 2023, this multidisciplinary team created a quality basis for a step forward in the digital transition of all 38 countries in which it operates.

Many sectors have made significant progress in digitalization in recent years. They are rapidly being joined by the building and construction sector, which is increasingly benefiting from improved energy efficiency and resilience and reduced costs. In addition, there are increasing global demands to reduce emissions of greenhouse gases (GHG) and harmful gases, and the demands of building users for safer and healthier living and working conditions. In earlier years, digitalization was characterized by high initial investments, mitigated in recent years, leading to greater attractiveness and profitability of numerous digital solutions.

Digital services and solutions are characterized by adaptability to the specific needs and requirements of users. Through the intelligent analysis of data from different domains, users and building owners are enabled to have the right information in a real environment as a basis for making quality decisions.



Photograph: E Co.

The E Co. team.

Buildings become smart by implementing smart digital solutions, i.e. by various devices and sensors that provide and process information and perform actions based on the received information. Smart buildings are equipped with intelligent systems that can be classified into management services and support services. The application of various smart environment applications has spread to complex buildings such as hospitals, office buildings, and educational and sports buildings, where sensors provide information to management, staff, and users.

The goal of applying digital solutions in buildings is the digital transformation of cities and the creation of smart cities that connect the environment, economy and mobility. This goal is achieved by combining and interacting the following aspects:

- Optimization of natural resources through environmental protection, energy efficiency and waste management,
- Mobility through public transport efficiency, traffic management and parking spaces management,
- Informing citizens, inclusive society, citizens making decisions, e-learning, and
- Quality of life of citizens, safety, and management of natural disasters.

Some leading international financial institutions recognize digitalization as one of the main directions of investment in the next medium-term strategies, considering the interaction of digitalization with all other investment areas to achieve social, ecological, and economic sustainability. The EBRD has particularly made progress in this regard, placing digitalization as one of the three main topics for the current period.

The project has developed nine specific sector digitalization roadmaps that show the paths that public or private sector buildings/organizations should take to achieve higher levels of digital maturity. Thanks to the cooperation with the E Co. team, specific roadmaps have been developed for multi-residential buildings, commercial/public buildings, single-family houses, then for the various sectors of generation and distribution of the energy used by buildings, as well as for managing electric car charging and parking in buildings. For each of the nine roadmaps, the processes, benefits, barriers, key performance indicators, security challenges, technologies that can be used within it, necessary activities for moving to each next level of digital maturity, the role of the private and public sector and financial institutions, as well as successful examples from practice around the world are explained. Key performance indicators are related to digital awareness, process management, human resources, assets, cyber security, digital communication with customers, remote management, process optimization and leadership in applying digital technologies.

The benefits of digitalization in buildings, such as cost and GHG emissions reduction, work optimization, improved safety, comfort, and communication with users, will, in most cases, overcome obstacles such as the amount of initial investment, lack of understanding, lack of transformation, and change management strategy, and IT skills.

Prioritization of investment in selected digital technologies should be tailored to specific regions, sub-sectors, and types of public or office buildings.

The pinnacle of the project was achieved by developing a complex and unique tool intended for assessing the justification of investing in a building or a group of buildings. The updated investment justification considerations include improving the digital maturity level of the building as a basic precondition. However, this tool defines that, in addition to improved digital maturity, the investment decision also considers the level of energy efficiency improvement and the financial aspect through the payback period. The tool suggests considering the use of 44 digital technologies that can be applied in buildings and very precisely advises users and guides them through various steps to make a quality and correct investment decision.

Considering the connection between digital technologies and all sectors of physical infrastructure and services, as well as the great effects of digital transformation, the support of international financial institutions in this area will soon be one of the main activities of most of these institutions. Focusing on innovative digital technologies, identifying investment potential and necessary resources for their application in commercial, residential, and public buildings is very compatible with the green economy policies already present in these institutions. By overcoming the various barriers that have been identified, the E Co. team that worked on this project foresees a long life and coexistence of digitalization and the green economy.

Promo


# THE UNTAPPED POTENTIAL OF ENVIRONMENTALLY FRIENDLY HEMP PELLET

Suitable climatic conditions and quality land help our country's potential for the cultivation of industrial hemp. These are not just assumptions but proven facts. The former Yugoslavia was its biggest exporter of hemp in Europe in the mid-20th century. We spoke with Hadži Zoran Jovanović, a hemp expert, about this plant's importance and benefits for the environment and energy.

Fifteen years ago, together with his colleague Dr Maja Timotijević, Zoran instigated the return of industrial hemp to Serbian fields and its processing. The two of them received support from the Development Agency of Serbia and the Innovation Fund through the Smart Start grant. What followed was the formation of a startup called ReHemp d.o.o. Novi Sad, whose name is translated into Serbian, means — hemp again.

Speaking about hemp's advantages, in the period from April to August, which is the period between planting to harvesting hemp and the care which does not require the use of chemicals during the noted period, up to 10 tons of stalk-biomass can be generated, which is a result unique only to hemp and no other plant species. Growing this plant reduces the need for deforestation because it has a significantly higher amount of cellulose than trees. At the same time, it also improves the health of the soil, which it can clean even from radiation. Considering waste pollution, hemp can replace plastic in all aspects and in terms of air pollution; during its growth, hemp absorbs up to seven times more $CO_2$ than other plants.

There is a benefit for factories, too, with the help of environmental vouchers. Namely, every factory that emits $CO_2$ during its production process pays taxes. However, if the factory proves that it financed the planting of industrial hemp in certain areas by calculating the quantity of carbon dioxide the planted hemp absorbs and if this amount is equivalent to the quantity of carbon dioxide the factory emits, the company is exempt from paying taxes. Hemp's



Photograph: Pixabay/Hanffaser Uckermark;

Growing hemp reduces the need for deforestation because it has a significantly higher amount of cellulose than trees, while it also improves the health of the soil, which it can clean even from radiation

benefits are multiple; as Hadži Zoran Jovanović says, this is a miraculous plant that nourishes, clothes, heals and warms.

Looking at problems in the energy sector, such as carbon dioxide emissions, unsafe sources of oil and gas and imported energy harmful to the environment, Mr Jovanović, an energy expert, started researching to make the most of this plant's potential. As he explains, about 30 products can be made by processing hemp flower and seed, while 70,000 products can be produced by processing the stem. However, since no one has seriously dealt with hemp, the stems only represented a problem for industrial hemp breeders.

That is why Mr Jovanović started researching how to transform this part of the plant from a problem to a benefit, and he found that pellets can be produced from the stem. The Republic of Serbia's Intellectual Property Office protects hemp pellets as a small patent. The importance of the pellet obtained in this way lies in its price cost as much as beech pellets but have 20 per cent higher caloric value. The production process is almost identical to that of other types of pellets. The only difference is that the hemp stem must undergo decortication, that is, the separation of the fiber from the pods. Burning the pellets obtained in this way produces less than two per cent of ash remains, which makes hemp pellets a fuel with the highest degree of utilization — 98 per cent.

Initial research, as Mr Jovanović says, led to excellent results demonstrating the great benefit of the aforementioned ash for producing organic mineral fertilizer. However, in cooperation with the Faculty of Agriculture in Novi Sad, they will implement a three-month project during which they will additionally test its application. Our interlocutor points out that the positive properties of this plant are not even close to being properly studied. Still, their company, in cooperation with various partners, is preparing new projects such as the Green Voucher. They are also working on protecting intellectual property rights for new products. Mr Jovanović believes that soon in Serbia, more buildings will be built from this plant, even seats in sports stadiums.

"At the moment, we cannot satisfy even 10 per cent of Serbia's needs with our pellet production", he says and adds that all the above requires the state's support, at least partly as far as solar and wind energy is concerned.

The potential also exists in the economic context, where the profit from selling all parts of industrial hemp can be up to seven times higher than from selling corn and grain, while the global demand for hemp pellets has grown a lot.

Prepared by: Katarina Vuinac

### HEMP'S SIGNIFICANCE THROUGHOUT HISTORY

The first Bibles were written on paper produced from hemp, which was also important for Columbus's discovery of America because ropes, sails, oils and clothes were made from it. In Serbia, our army fighting in the Second World War exclusively wore clothes made of hemp.

Photograph: Pexels/Thomas Vitali

# SUSTAINABLE WASTE MANAGEMENT WITH GREEN ENERGY

Achieving a sustainable future requires sweeping changes, making every sector greener. The generation of electricity from clean sources is one of the most significant changes required, starting with small energy consumers and moving to large ones. The public utility company Pirot Regional Landfill is an example of a large consumer, considering that the waste separation line requires significant amounts of electricity. Thanks to the decision to build a solar power plant on the roof of this facility, waste management in Pirot will become a more sustainable process. Designing was entrusted to the CEEFOR company, which has many years of experience in sustainable development, energy efficiency and design services in renewable energy sources. We talked about the project and the importance of its realization with Bojan Stević, a graduate mechanical engineer who leads the entire project.

> The design was entrusted to the CEEFOR company, which has many years of experience in the fields of sustainable development, energy efficiency and design services in renewable energy sources

The RD Pirot solar power plant with an installed capacity of 150 kW is planned to be built on the roof of the building of this public company, which covers an area of 1,200 m2. The idea is that the power plant uses the produced electricity to power its own daily needs until the moment of acquiring the status of a prosumer, after which the produced surplus will be handed over to the distribution system.

– The first information that we needed and that we received from the management of PUC Pirot Regional Landfill is the current consumption and some projected consumption of the plant, with which we can calculate



Photograph: Unsplash/Nuno Marques

manufactured by Fronius. One of the best solutions from K2 Systems was chosen for the substructure.

As this solar power plant requires the expansion of the electricity connection, it took a little more time

> The solar power plant RD Pirot, with an installed capacity of 150 kW, is planned to be built on the roof of the building of this public company

the next year, so that the work will be completed in the spring of 2024 and in this way the full potential of sunlight will be used by the end of that year.

The Center for Energy Efficiency and Sustainable Development (CEEFOR) has been successfully operating in the field of sustainable project development and energy efficiency in the Balkan region for thirteen years. It offers its clients consulting and design services in renewable energy sources. The company's professional team is ready to respond to all client requests and answer all questions. A long list of satisfied clients is the best indicator of the expertise and dedicated work of the company.

Prepared by: Katarina Vuinac

what their needs are and concerning that, we design the solar power plant – said Stević.

The original plan included the current panels of 410 Wp individual power at that time, with the installation of 440 solar panels, 348 on one facility and 90 on the other. One of the best solar modules on our market, Luxor Solar 545 Wp, was chosen for this solar power plant. Also, the solar power plant will contain eight inverters

to collect the necessary documentation and approvals.

Given that the PUC Pirot Regional Landfill facility is located on the international corridor, this public company plans to connect a charger for electric cars, which will come with a smart canopy.

The start of the construction of the solar power plant RD Pirot is planned in the winter period, that is, at the end of this year or the beginning of

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Photograph: Milica Radićević


# ENERGY 2023 – SERBIA FACING THE CHALLENGES OF THE ENERGY TRANSITION

The traditional international conference 'Energy 2023 – Energy Independence of the Region in the Light of Global Disruptions – New Reality' took place in September at the MONA Hotel on Zlatibor Mountain. The conference gathered over 300 participants and prominent foreign and domestic experts. The event included four panel discussions on current topics and the presentation of over 80 scientific and professional papers.

Current challenges related to the safety and security of the energy and energy product supply were the first panel's topic, chaired by Professor Nikola Rajaković, President of the Union of Energy Workers. The conversation centered around the strategic goals of the energy transition, which, according to the panel participants, were temporarily put on the back burner due to the current situation. The panelists agreed that the energy transition remains a long-term issue, so the experts must look

The CBAM mechanism represents a major challenge for Serbia because coal is still our country's primary energy source for electricity production



Photographs: Union of Energy Workers

### EU'S SUPPORT IS NECESSARY

Until now, the Western Balkan countries were not sufficiently integrated, which is why they did not have access to the necessary funds for the decarbonization process, which were available to the EU countries. For this process to be expedited and successful, it is necessary to reaffirm and ensure the formalized, institutional and financial support of the European Union.

at all aspects to find the most suitable way and path of decarbonization, especially in the energy, transport, industry and other sectors.

Ilija Batas Bjelić, PhD, the Secretary of the Energy Association, who presided over the second panel, spoke about the visible challenges of climate change, emphasizing that the continuation of energy policy is not possible if it is based on lignite. He added that, in theory, there is an almost infinite set of different energy system structures that meet the limits of sustainability. Batas Bjelić, PhD also said that it was important to consider the positive experiences of other countries such as Greece or North Macedonia in our country's transition to the state of sustainability.

The so-called hydrogen transition, which is already widely implemented by leading global economies and technological leaders, and which is also a prerequisite for the complete decarbonization of Serbia, was the topic of discussion at the third panel, chaired by Professor Milun Babić, President of the Assembly of the Union of Energy Workers. According to the panelists, this kind of decarbonization inevitably requires the massive use of hydrogen as an energy carrier, which is why Serbia must be ready to approach the process of this kind in the global transition. Serbia must implement many reforms in science and education and change the role of the state apparatus, industrial processes, social programs, and the economy. The development of hydrogen technology in Serbia requires the full integration of our country into the hydrogen transition processes in the European Union and cooperation through membership in alliances aimed at developing and promoting this technology, as well as engaging in joint research, participating in regional and interregional projects and programs, carrying out standardization and more.

The last panel rounded off the previous discussions with an important topic that indicates the negative consequences for our country if it does not continue decarbonization. Professor Dušan Gordić, PhD, editor-in-chief of 'Energetika, Ekonomija, Ekologija' magazine, together with the panelists, discussed the EU Emissions Trading System (EU ETS) and the Cross-Border Carbon Adjustment Mechanism (CBAM). Focusing on the CBAM, the panel participants presented the basic regulatory elements and principles on which it is based, pointing out the flaws and effects of the two dominant carbon price collection mechanisms – carbon fees (taxes) and the emissions trading system. The CBAM mechanism represents a major challenge for Serbia because coal is still our country's primary energy source for electricity production. If there is no significant decarbonization, the products manufactured with foreign investments and exported to the European Union market will become less competitive and even uncompetitive after implementing this mechanism.

Union of Energy Workers


# HOUSES MADE FROM SHIPPING CONTAINERS

Warm, functional, and well-designed homes, usually of small square footage and made of environmentally friendly materials, are becoming a must for people who strive for a sustainable lifestyle. Mobile homes, which provide a special sense of freedom and a certain degree of flexibility, are increasingly being made from shipping containers. Thanks to the idea and skilled hands of Goran Ergić, containers that are no longer in use become ideal places for workspace, rest or home and can also be excellent data centers, control units, data storage units, and rooms for aggregates.

Interest in different types of architecture and construction using the existing potential that incorporates environmental protection has always appealed to Goran. He got the idea to breathe new life into containers that had already served their lifespan during an annual vacation a few years ago. That's when he bought the first container and started the restoration, which lasted a little longer than he imagined. During that time, the idea to create Container Home Solutions and work under the Avala Home brand was born. Initially, he carried out all the work in the family house's yard, while today, he has a small production hall.

## Mobility and long life

Shipping containers are made of COR-TEN steel, one of the best steel alloys. It practically means that, with minimal maintenance, container houses can last up to 70 years. Furthermore, they are mobile and completely different from standard prefabricated houses. During the renovation, clo-

Photographs: courtesy of Goran Ergić

sed-cell polyurethane insulation is used for insulation, three times better than standard stone wool insulation and is one of the best in the market.

Goran pays special attention to energy efficiency, which he achieves by using three-layer glass with seven-chamber profiles that enable additional thermal protection. Also, all windows and doors are sliding, while utmost attention is paid to making maximum use of the space. Goran underlines that he always uses materials that are of top quality to make the building durable. All materials used for the renovation of containers must have an eco-label. The adaptation of shipping containers is an entirely modular construction system. From day one, the buyer can participate in drafting relevant plans and choosing the facility's appearance. Goran points out that the design is very precise and that the main goal is to make maximum use of the space. A significant advantage of these containers is the possibility of combining several units and a wide choice of materials. In the end, the customers get a unique, functional, turnkey solution made according to their wishes.

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The containers are placed on pillars, which can be connected by the foundation, depending on the configuration of the soil. The installation itself takes several hours. These facilities are very safe even in the event of an earthquake or some other disaster, and they will not change their shape.

"We currently offer five models of containers. The G5 building is made from a shipping container with a surface area of 14m² and is suitable for a studio or auxiliary building in the yard. The G11, G22 and G33 models (27m²) are made of one long shipping container suitable for cottages, offices, and everyday living spaces. The G240 model is made of two shipping containers, and it is comfortable and suitable for everyday life," Goran explains.

He also noticed that containers are in demand as data centers. He also offers solutions that can be installed outdoors, which can help with problems with a lack of space in the IT environment. Containerized units can be shipped anywhere with fully installed equipment ready for use. These units can be used as data centers, server rooms or monitoring units.

Prepared by: Milica Radičević

### SMART HOME SYSTEM

Fully automated containers have a smart home system that enables full control of all switches, sockets, and other devices via mobile phone. In practice, this means, for instance, if you are on your way to the facility, you can turn on the heating or the water heater beforehand.

# SOLARISE PRECISELY CALCULATES THE NUMBER OF PANELS NEEDED FOR ONE ROOF

Clean forms of energy are a topic that has been often discussed lately which is why it seems to us that we are sufficiently familiar with it. Yet if we were to decide to install solar panels on the roof of our home, the first question we would need to answer would be how many panels we would need.

A team of final-year undergraduates and young software engineers, Uroš Poček, Tamara Ilić, Tina Mihajlović and Milica Sladaković, devised a way to simplify at least one segment of this procedure. Their story begins in November last year when RE:HACK was organized by Science & Technology Park in Novi Sad and GIZ.

This hackathon required a solution and a simple business model for the use of solar energy in households to be found in 48 hours, which none of them had encountered before. That's when the idea for the development of the SolaRise startup began to simmer. The third place they won at the hackathon and the mentoring support they received for further work prompted Uroš, Tamara, Tina and Milica to develop their own business models for product launch. Although this proved to be the most difficult part of the job, no obstacle was insurmountable, they say in a good team spirit fashion.

Based on a satellite image of the location that is entered, their software recognizes the facility and accurately measures the area, offering information on how many panels are needed to cover the average electricity needs of the household



Photographs: (top) Pixabay/Markus Winkler; (bottom) SolaRise

## What is the SolaRise software?

As Tamara explains, their software performs measurements and generates an offer for the installation of solar panels on people's properties in just three clicks of a mouse. The client needs to enter the address where they plan to install the panel and everything else is done by this team of young people thanks to their artificial intelligence (AI) model which they developed using satellite images of locations in Serbia and several other European countries. Based on a satellite image of the location that is entered, their software recognizes the facility and accurately measures the area, offering information on how many panels are needed to cover the average electricity needs of the household.

The complete analysis, calculations and offer are generated in about 15 seconds, which includes information about the price of panel installation, the amount of energy produced, the return on the investment, etc. The whole process, including entering data and the address, lasts about 60 seconds. Although there are similar ideas in the market, this one stands out for its speed and simplicity, advanced AI model and competitive price.



Companies that install solar panels have recognized the benefits of cooperating with the Solarise startup. If they decide to provide access to this software through their website, they will make their services more qualitative and competitive. In this way, potential clients will be able to check whether the installation of the panels is worthwhile for them and whether they want to consider it more seriously, while the company will be able to do the initial planning faster and more efficiently, and then dedicate its full time and services to those people who really want to become their clients.

While working on the project, the team found out that panels of different quality are sold in our market, which causes a substantial difference in prices, and manufacturers who sell more expensive, but better quality panels have a problem justifying the price with the consumers and stand out in comparison to products of lower prices and quality. That's why the platform was developed as a SaaS (software as a service) product that companies can install on their websites and make available to users, thereby further boosting their market advantage.

Given that the measurement and putting together of offers is done via Google satellite images, such services are possible for facilities located anywhere in the world. However, in the initial period, the SolaRise software will be available only in Serbia, while in the following phases, the focus will be on the markets with a substantial number of solar companies. In terms of the type of roof that is suitable for measurement, the engineering team primarily focuses on households, but after conducting in-depth research into the industry, they realized that commercial buildings, shopping malls and power plants also expressed interest in switching to solar energy, because it reduces their costs and boosts business. This is why they plan to focus their attention on such facilities when making the next version of the software.

Prepared by: Katarina Vuinac

Photographs: SolaRise

# TOP ENERGY 2023 AWARD CEREMONY

The 16th International Clean Energy Technologies Forum, titled 'Perspectives of Economic Development Through Support to the Energy Sector', assembled many experts who discussed RES, energy and energy management.

According to the Forum's chairman, Tihomir Simić, the participants of the event are the best examples in Europe and the world of being innovative in the current energy situation, which is the number one topic in the world, now, to somehow make it more understandable and solvable as it is a burden for all of us together.

Zoran Tasić, PhD, Deputy Secretary in the Provincial Secretariat for Energy, Construction and Transport, said that the Provincial Administration is ready to provide support for the acceleration of investments in renewable energy sources, launch projects related to energy efficiency and continue working on raising awareness among the youngest generations about the importance of energy efficiency in environmental protection.

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Assistant to the Minister of Mining and Energy for International Cooperation and European Integration, Jovana Joksimović, said that in the coming years, about 15 billion euros should be invested in Serbia's energy sector, pointing out that studies show Serbia's great natural potential for production of energy from renewable


Photographs: Katarina Vuinac

sources that we need to use for the energy transition to be successful.

The following topics discussed at the Forum were energy challenges and ways to overcome them.

Miodrag Mesarović from the Academy of Engineering Sciences of Serbia spoke about the proposed Integrated National Energy and Climate Plan for the Republic of Serbia, covering the period until 2030 with a vision until 2050 (INECP). Aca Marković, from the Energy Agency of the Republic of Serbia, said that rapid technological changes in the energy sector are conditioned by including renewable sources in classic electricity production. All these further condition changes in national legislation and new approaches in the economic valorization of this application of technology.

The second working session was dedicated to the challenge of energy substitution and diversification for a smart future.

Boštjan Kočar, president of the Israeli-Slovenian Club, spoke about Apollo Power, Israel's first and largest flexible solar panel factory. He spoke about the performances of such panels and their various application options, as well as innovations such as solar awnings for terraces, solar-powered sidewalks made from recycled tires and others.

Regarding innovative technologies, Danka Nešović, director of PEP – Aviation Academy, spoke about the importance of using drones in the energy system. She also presented drones whose batteries are powered by solar energy, as well as drones that are used for cleaning solar panels.

## Awards for the best

In 2016, the International Clean Energy Technologies Forum established the TOP ENERGY Award, a public recognition for exceptional energy projects, commitment and work in improving clean energy technologies and security. This year's award, TOP ENERGY 2023, was given to the MT-KOMEX company for its 30 years of successful operations and leadership in the RES segment. The company built and equipped over 200 solar power plants and recently commissioned our country's largest solar power plant, DeLasol. The company's Director, Miloš Kostić, received the award on behalf of his team.

At the beginning of his presentation, Mr Kostić expressed great satisfaction in participating in the Forum. He thanked the award jury for recognizing his team's hard work who received this prestigious award. Mr Kostić also discussed the company's beginning, challenges, and successes. He pointed out that he hopes that more barren land will be used to construct solar power plants instead of agricultural ones in the future. He also spoke about the concept of prosumer and future expectations in terms of electricity prices for industrial facilities and households.


The 16th International Forum is traditionally organized by the Institute for European Affairs and the Faculty of Technical Sciences in Novi Sad under the auspices of Vojvodina's Parliament.

Prepared by: Katarina Vuinac


# RECYCLING PACKAGING AT LIDL: DONATE OR REDUCE THE BILL

Until now, as part of Lidl's pilot project, Recycling – because one good turn deserves another, in Novi Sad and Niš, consumers have had the opportunity to donate 5 dinars to the Be Humane foundation for every returned Lidl PET and ALU packaging, and from now on they can also provide a voucher that reduces their bills in the amount of 5 dinars for each returned packaging. In addition, two more new recycling machines were installed in stores in Belgrade.

As part of the expansion of Lidl's ecological and humanitarian project, in addition to consumers in Novi Sad and Niš, from the end of September, Belgrade residents can also recycle at Vidikovac at Kneza Višeslava Street 61V and in Borča, at Bratstva i Jedinstva 2D.

The project, Recycling – because one good turn deserves another, has not yet been applied to all stores in Serbia. Still, the pilot phase in which the project is located has shown experience and solutions from Germany and other European Union countries can greatly contribute to a faster and more efficient introduction of the circular economy model to the Serbian market.

## How to use recycling machines?

Using the devices, which consumers will notice at the entrance to one of the five stores where they are installed, is very simple — it is necessary to insert into them PET packaging with a volume of 0.2 to 0.3 liters or cans of alcoholic and non-alcoholic beverages purchased in Lidl stores, one by one.

When all the packaging has been inserted, you need to click on the button on the screen and choose whether you want to download the voucher or donate. For the packaging to be accepted, besides having a visible barcode, it is necessary to be empty and without damage. Packaging made of cardboard, glass, milk and non-aluminum cans will not be accepted.

The Project: Recycling – because one good turn deserves another was created intending to test citizens' readiness for today's environmental challenges and grew out of Lidl's global strategy REset Plastic, which seeks to involve and educate consumers through various initiatives.

| LIDL STORES WITH RECYCLING MACHINES | |
|---|---|
| Belgrade | ► Vidikovac, 61V Kneza Višeslava<br>► Borča, 2D Bratstva i jedinstva |
| Novi Sad | ► 2 Bulevar Vojvode Stepe<br>► 98A Temerinska |
| Niš | ► 47 Vizantijski bulevar |



Photograph: *Lidl*

# E Co. is growing!

As a valued partner in our work to advance climate mitigation, adaptation, and resilience, we wanted you to be the first to know that we are expanding our team. Our long-standing sector and geographic expertise won't change, but we'll be adding new specialisms to the company.

## New arrivals:

HEAD OF CONSULTING

**Beverley Salmon**

M.Arch, Dipl.Arch

Architect & international development expert with focus on climate-resilient urban development.

PRINCIPAL

**David Leipziger**

MBA, MURP

Low-carbon cities expert with 15-year career in project finance, market studies, & policy research.

## Resident experts:

FINANCE & ENERGY

**Marijan Gajšak**

Croatian

ENERGY EFFICIENCY, BUILDINGS & INDUSTRY

**Miodrag Grujić**

Serbian

FORESTS & AGRICULTURE

**Irina Hauler**

Armenian/ British

ARCHITECTURE & CITIES

**Tamara Trumbić**

Croatian

CLIMATE FINANCE

**Remus Bandacu**

Romanian

RENEWABLES & TRANSPORT

**Paula Guillaumet**

Argentinian

## Recent Projects:

- Green City Action Plan for Karlovac, Croatia
- Green Bond Assessment Serbia
- Green Financing Roadmap for Tirana
- Digitalisation of Building Energy Efficiency
- Armenian Green Bonds Assessment
- Moldovan Renewable Energy Financing
- Georgian Energy Sector Reform
- Western Balkans Sustainable Mobility

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