



ENERGY PORTAL MAGAZINE

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PHILIPPE GUEX

Ambassador of Switzerland

Country with
the Best Attitude
towards Ecology

ISABEL AIRAS

Advisor for the Circular Economy

New Use for the
Things that Served
their Purpose

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Recycled tires
are getting
a new chance

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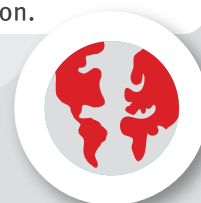
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Dear readers,

This time we have decided to put a focus on the circular economy as it represents a new, more sustainable economic approach that should replace the widely spread and worn-out linear model. We are familiar with the principle of the circulation of matter in nature, and today it has become necessary to introduce the principle of circulation in the production as well in order to minimize the waste production, and the products that were previously obtained are given a new purpose after alteration or an entirely new form and purpose after recycling. Among the first ones who mentioned this concept were British economists Turner and Pierce, who recognised the lack of a desire for sustainable development among traditional entrepreneurs. Apart from them, many other economists have tackled the challenge to find a new business model that saves resources, does not create waste, protects the environment and at the same stimulates economic growth and job creation.

Traditionally, the concept of life was based on the policy of taking, exploitation, and rejection, while the circular model advocates return to nature and the reuse of already used products. Drawing attention to energy efficiency and environmental sustainability makes the keystone of this way of thinking and can be applied to all aspects of life.

According to the World Economic Forum, Switzerland is the country with the best attitude towards the natural environment and the significant extent of the use of renewable energy sources. It is for this reason that we decided to learn from the Swiss ambassador in Serbia, Philippe Guex, how they manage to maintain the balance between economic growth and preservation of the environment for years.

In this issue, you can also read an interview with Isabel Airas, Advisor for the circular economy, Serbian Chamber of Commerce, who shared with us her international experience in the field of environmental protection. Serbian Chamber of Commerce and "CirEkon" organised Circular Economy Academy in September and October, and one of the lecturers and organisers at the Academy was Milan Veselinov, with whom we also discussed the benefits and savings resulting from the implementation of the new economic model.

"Eko-sistem", a company from Novi Sad gives new life to rejected tires by making rubber flooring tiles for children's playgrounds, speed bumps, wheels for trash cans, as well as many other products. About the successes, but also the difficulties of this young company, we talked with Natasa Bozicevic-Stankovski, the responsible person for waste management in the "Eko-sistem".

There are also stories on examples of good practice applied by companies "Resalta", "Wilo" and "Delta inženjering", and the section "People and Challenges" brings you an interesting text about the dried pumpkin pasta made by Slavica Orelj, a Belgrader.

We try to keep up with the times, so this issue of the Magazine got a new look. We hope that you will like a more modern cover and more transparent sections, of course with the texts we have chosen for you.

Nevena Djukić
 Nevena Djukić,
 Editor in Chief



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Ambassador of Switzerland
Champions of Recycling and
Hydropower Generation

The Swiss people hold a high rank in the world when it comes to a level of recycling and the use of hydropower that provides most of the electricity in the country. Also, almost 98 per cent of the population is connected to a central wastewater treatment plant. What are the most important measures which have been taken by the government to preserve the resources and environment, we asked Philippe Guex, the ambassador of Switzerland to Serbia.



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Advisor for the Circular Economy at the
Chamber of Commerce of Serbia
We Must Replace Linear Economy
with a Model of a Closed Loop

"It is pretty simple", Isabel Airas explains the concept of the circular economy which is not well-known in our country. "We should not take some material, make a product, use it and throw it away but take some material, make a product, use it, remake it (or fix it), reuse it and so on."

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“Eko-sistem” Novi Sad

One of the Best Examples of the Circular Economy Applied in Serbia

“We are the recyclers, we take care of waste and process it mechanically, and then we refine it and make an end product. There are numerous purposes of granulates from road infrastructure to children’s playground and sports fields. All this contributes to making Serbia cleaner and more beautiful”, says Natasa who is in charge of waste management in the company.

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Circular Economy Expert

One Man’s Trash is a Treasure for an Expert in Circular Economy

About the postulates on which the circular economy model is based, whether Serbia keeps pace with the world, how to attribute to waste the value it has in itself and how to make a production system that will allow us to develop on the only planet we have, we talked with Milan Veselinov, one of the organisers and lecturers at the Academy of Circular Economy that is held at the Serbian Chamber of Commerce.

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CIRCULAR ECONOMY

Have you ever strolled around the park and asked yourself where all the leaves that have covered the ground only a few months ago went? Or how the hell the sunflower shells that you have showered the soil around the bench with disappeared just like that after some time? When Barry Commoner, the creator of the four laws of ecology, said that everything had to go somewhere and everything was connected to everything else because nature knew best, he thought of the organic matter that included leaves and sunflower. If you eat a banana and you throw its peel in nature, after a while it will come to its decomposition and in the end, it will completely vanish, just like leaves and sunflower. It is understood that that would not be the act reflecting culture and a good upbringing but it would not contaminate the environment permanently.

However, if you throw an empty plastic bottle, it is not going to resolve in nature. You cannot pick up the plastic from the tree like you can do with a banana. The plastic is



not the organic material which is going to be decomposed by the enzyme (even though the scientists did discover the artificial one which could do that by accident). It is the material which is not the part of a circular system of nature and therefore it represents an intruder whose subsidence leads to permanent pollution. Just imagine how much orange rind, watermelon, potato and food remains are thrown out along with these plastic bottles, cardboard packing, burnt bulbs and emptied batteries. I believe that it is going to sound like I am emphasizing but the responsible services in the public utility company “Gradska cistoca” gave estimates that the landfill in Vinca receives 1,500 tons of different waste. If Belgrade alone produces this much

trash, it is inevitable not to think how much junk is produced daily in our country as a whole.

Produce-use-recycle-reuse – that is the shortest and the simplest explanation of circular, or green, economy. During the second decade of the 21st century, the waste has become one of the world's biggest strategic resources which is being used as an important energy source. While some countries (such as Norway) are processing sludge to get biogas, we are still having huge difficulties cutting out the use of plastic bags. And that is our big problem! There are no major shifts either in the sorting of waste or recycling, although both could be a source of income. Let's take the example of the glass packaging that is thrown out of



the restaurants and cafes all over Serbia each day. Instead of being converted to profit, the glass ends up at the unregulated landfills. Due to the overall bad situation in this area and the lack of infrastructure capacity, Serbia is even forced to import it from neighbouring states. On the other side, there is not a single compost facility in Serbia that would process green, organic waste and produce exceptionally significant biocompost for agricultural land. Biocompost would lead to reduced use of artificial fertilizers and, consequently, to even more reduced soil contamination. In other words, the waste that is all around us, both in nature and wild landfills, remains unused. As it cannot circulate naturally, it is necessary to enable it with additional human effort. That effort, on the one hand, opens up the possibility of employment and gaining financial profit and on the other hand, leads to less pollution of the environment. It is the fact that our environment is polluted, but we should not worsen the current state but to improve it. That means that even though we undoubtedly must generate trash, we should not increase it but use it again through a sustainable and more importantly economically cost-effective system. That is why we should add the element of earnings to the previously mentioned definition. In that case, it goes like this: *produce-use-recycle-reuse-earn*. And that would be the essence of the circular economy itself.

Radomir Jovanovic



There is not a single compost facility in Serbia that would process green, organic waste and produce exceptionally significant biocompost for agricultural land



Philippe Guex, Ambassador of Switzerland

With its unspoilt nature, clean lakes and rivers, Switzerland has had a healthy advantage for reaching the highest position in a category concerning ecology. What nature has unselfishly given to this country, nestled in the fairy-tale landscape of the Alpine massif, the Swiss are trying to preserve by applying regulations in various sectors and whose integral part is an aspiration to conserve the environment. In addition to the Federal Constitution, which in its articles on nature and cultural heritage protection, on agriculture and implicitly on spatial planning and forests defines a way of preserving nature and landscapes, Switzerland has adopted five laws particularly associated with nature and landscape that contribute to the realization of constitutional mandates. We asked Philippe Guex, the ambassador of Switzerland to Serbia, how much the Swiss are satisfied with the accomplished level of environmental protection.

EP *What are the most important measures which have been taken by the society and government in order to preserve the pristine landscapes Switzerland is famous for?*

Philippe Guex The Federal Act on the Protection of Nature and Cultural Heritage (NHG; SR 451) defines the duties of the Confederation in order to conserve the landscape, local and historical sites, and natural and cultural monuments or to preserve them undiminished where the general interest

prevails. The Federal Acts on Spatial Planning and Forests also regulate the area of nature and landscape protection, and the Federal Act on Agriculture (LwG; SR 910. 1) mandates the federal government to ensure that agriculture makes a significant contribution to maintaining the cultural landscape. Direct payments help to achieve this goal. In addition, the Federal Act on the Protection of Waters (GschG; SR 614. 20) aims also to preserve and enhance waters as landscape elements. Despite all these efforts, however, landscape quality in Switzerland is still declining (FOEN 2017).

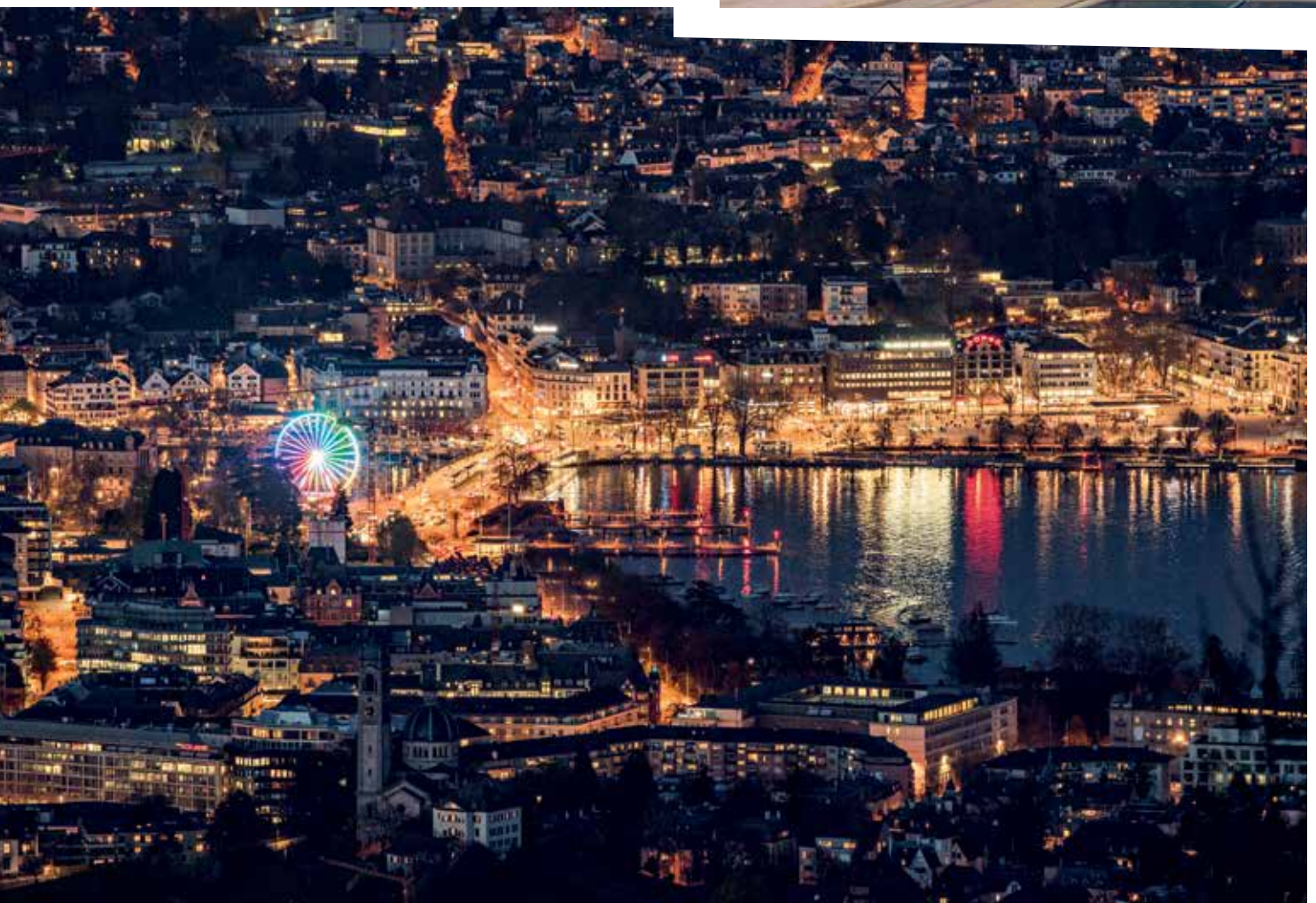
EP *Swiss citizens happen to be champions of recycling. They have been giving a second life to around 90% of glass, over 90% of aluminium cans, over 80% of PET, etc. How long did it*

Switzerland has the sixth highest share of renewable energy in electricity generation among the member countries of the International Energy Agency (IEA) thanks to large hydropower generation

take to achieve this high citizens' response and how much did that reduce the need for landfills and their capacity?

Philippe Guex Switzerland started in the 1970s with the separate collection of paper and glass bottles. In the subsequent years, additional waste fractions have been introduced, for example, batteries, aluminium cans, textiles compost etc. These separate collections have been supported and even demanded by the citizens.

The most important act for the reduction of the need for landfills was the interdiction of the landfilling of combustible waste (e.g. municipal waste) by law in the year 2000. Today, municipal waste has to be recycled or incinerated in Municipal Solid Waste Incinerators by the recovery of energy and metals from the residues of incineration.



Photographs: (middle right) swiss-image.ch / Daniel Ammann; (bottom) swiss-image.ch / Sylvia Michel

EP *Not so long ago we heard about electric-powered carriages (horse and electric power combined) in Avenches which were introduced for garbage and old paper collection. What are the benefits of their usage and has their use become common in other municipalities too?*

Philippe Guex The prototype electric-powered carriage was presented in Avenches during the summer of 2012. Aims are to promote the engagement of horses for community tasks such as garbage or old paper collections. The electric carriage functions the same way as an E-bike; suggesting that once the horse loses power the E-carriage kicks in! This obviously supports the horse in its efforts and perseverance. Of course, the innovative project also presents an ecological, practical and noise-free solution for suburban traffic. Some common tasks, garbage collection, for example, consume large quantities of hydrocarbon, as the motorized vehicles used to carry out the task constantly stop and go, then pick-up speed only to break, stop and go once again just around the corner. With the possible use of E-carriages, tradition would thus merge with technology.

EP *Switzerland is the most environmentally friendly country in the world according to the World Economic Forum, with substantial use of renewable energy resources. What percentage of electricity produced in Switzerland comes from renewable sources?*

Philippe Guex Hydropower is the largest power source in Switzerland. In 2017, hydropower accounted for 59.6% of total electricity generation. Municipal waste incineration and solar power accounted for most of the remaining renewable electricity generation (6%). Nuclear energy provided 31.7% of Switzerland's electricity generation.





About **80 per cent** of the drinking water originates from groundwater resources. About **40 per cent** is consumed without any treatment, about **31 per cent** after a UV-disinfecting or another single step treatment

Switzerland has the sixth highest share of renewable energy in electricity generation among the member countries of the International Energy Agency (IEA) thanks to large hydropower generation. The share of hydropower is the fifth highest after Norway, Austria, Canada and New Zealand.

In 2017, the people in Switzerland voted on a legal package to implement the Energy Strategy 2050 and to phase out nuclear power gradually in the coming decades. Having said that, retired nuclear capacity will be replaced by more renewables and electricity trade, while at the same time electricity demand will be stabilized by higher efficiency whereas maintaining the low carbon generation and the high standards of supply security. A further set of market reform measures and a recast of the CO₂ Law are currently being prepared to set the country on course for its 2030 climate target.

EP *It's been said that almost anywhere in Switzerland you can drink straight out from a lake without second thoughts! And a tap water is also of high quality, so it seems a traveller won't need to buy bottled water there whatsoever. What is the "secret" of fresh and clean drinking water in your country?*

Philippe Guex Switzerland is the water tower of Europe and is rich in water resources of good quality. Furthermore, it has a very high standard of water sanitation. Almost 98 per cent of the population is connected to a central wastewater treatment plant, having a very high standard (over three-quarter of the wastewater is at least treated with a nitrification). The construction of this wastewater infrastructure since the end of 1960 has strongly improved water quality in Swiss rivers and streams. Lake water from deeper water layers is usually close to drinking water quality. Despite this fact, lake water is usually undergoing several treatment steps before entering drinking water supply systems.

About 80 per cent of the drinking water originates from groundwater resources. About 40 per cent is consumed without any treatment, about 31 per cent after a UV-disinfecting or another single step treatment and about 28 per cent having a more advanced treatment.

EP *Your government has been helping also the progress towards improved energy supply, increased energy efficiency and the promotion of renewable energy sources. What are the results in terms of achieved energy efficiency and how has renewable energy been promoted through this domain Sustainable energy and resilient cities?*

Philippe Guex During the period of the previous Cooperation Strategy with Serbia (2013-2017) the accomplished annual decrease in CO₂ emissions in the thermal power plant Nikola Tesla (TENT B) is estimated to be 135,000 t, which corresponds approximately to the CO₂ Emissions of an Airbus A320, which flies 5600 times the distance between Belgrade and Zurich. In addition, energy efficiency measures have been implemented in Belgrade in 12 public buildings (hospital and school) and reduced CO₂ emissions by 993 tons per year. First steps have been taken to improve energy management at the municipal level, and to promote renewable energy sources, specifically biomass, for heating, mainly in the poorer municipalities of Serbia. In the new Cooperation Strategy 2018-2021, we continue to support Serbia in increasing energy efficiency, use of renewables, and we support the increasing resilience of cities in Serbia.

EP *Apart from this domain, there are two more concerning the Swiss interventions according to Swiss Cooperation Strategy for Serbia 2018-2021. What are they and what are you planning the results to be by the end of this period?*

Philippe Guex The Swiss Cooperation Strategy for Serbia 2018-2021 defines Governance and Economic development

and employment as the two other priority areas of cooperation. By engaging in the area of Governance, we support Serbian municipalities to become more responsive and accountable for better services; the strengthening of the institutional representation of all citizens and municipalities and an improved citizen and civil society organization engagement. Within the area of Economic development and employment, we strive to achieve strengthened macroeconomic institutions, improved business enabling environment, increased competitiveness, and improved employability and employment.

EP *How would you evaluate the progress Serbia has made in these three domains and what could be improved according to your opinion?*

Philippe Guex Serbia has committed itself to have 27% of energy from renewable energy sources by 2020, to save 9% of energy until 2018 in comparison to 2008, and to reduce greenhouse gas emissions by 9.8% by 2030 compared to 1990. Serbia has adopted relevant laws but the implementation is rather slow. Often the central and local levels of government lack sufficient staff, funding sources are limited, and there





Photograph: swiss-image.ch/Andreas Gerth

The Impact Angel Network Serbia
 supported by the Swiss Government
has the objective to raise
the investment readiness of both
 angel investors and early-stage startups
 in Serbia



are not many plans for large investments. However, progress is first and foremost visible in the area of energy efficiency because there are plenty of projects in this area. However, more projects are needed in the area of renewable energy sources to reach the target of 27% by 2020.

Serbia has improved its macroeconomic situation and clearly reduced its public debt. Important strategies, as e.g. the PFM reform strategy, the Fiscal Strategy 2017-19 and the Transformation Program of the State Tax Authority were adopted and it is now important to implement these strategies as foreseen. In addition, improvements to the business environment were made through regulatory reforms and new legislation for insolvency resolution. Nevertheless, the predictability of the legal and regulatory framework still needs to be improved in order to attract new investments. Serbia has also made impressive developments related to the High Tech sector and innovation and it is motivating to see how quickly this sector is developing. Related to private sector-responsive skills development, Serbia has achieved an important milestone by adopting the law on dual education in November 2017. Switzerland is glad to share its expertise in this area during the process of implementing this new law, as it is an important factor to increase youth employment.

Serbia has made a sound improvement on the local government reform agenda in terms of local services offered to citizens, as well as the internal functioning of local administrations. We have been supporting local governance



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reforms for more than 15 years and we were able to observe progress. Where we believe there could be more room for improvement is the way of functioning of the Parliament, as well as the parliamentary culture. We have been supporting Serbian Parliament for the past 7 years. The Parliament could make an even better use of its instruments, such as financial oversight portal, public hearings and mobile committee sessions in the best interest of citizens.

EP *Switzerland contributed to progress in Serbia on many levels. Among other things, the Impact Angel Network Serbia was launched on August 30th, with the aim to enable startups*



During the last three years,
 36 new start-up companies were
 established in the Technopark,
 over 310 engineers have received
 employment and **Technopark**
 companies realized exports
 worth of 29 million euros



tential early-stage investors who are demonstrating the interest in finding financial instruments and models that can be adapted for startups in Serbia. Thus, the Impact Angel Network provides a mapping and analysis of angel investing instruments and practices ranging from “convertible note” to “safe notes”, “equity options” and the likes. Likewise, it develops models that draw from these international best practices adapting them to the legal and financial framework in Serbia. The Impact Angel Network also provides angel investors with opportunities to syndicate deals that are discovered and filtered through the Impact Hub Belgrade. Syndication is a way to mitigate risk and to engage more business angel investors in one investment in order to secure needed sector and general expertise, which will support the growth of the startups – together with the capital investment.

EP *Another way of support was offered to young people and their startup businesses through the project “Science technology park Belgrade – the new export instrument of Serbia” (2015-2019). Could you tell us more about it?*

Philippe Guex Through the project “Science technology park Belgrade - the new export instrument of Serbia” (2015-2019), the Swiss Government has supported the development of the first Science and Technology Park in Serbia. This project was a subsequent step of the support that was provided by Switzerland to the Business Technology Incubator of the Technical Faculties in Belgrade. The Swiss Government has supported the development of the Technopark Belgrade, which is now a modern tech park built on world’s best practices and adjusted to Serbian conditions with a progressive model for attracting companies and offering a range of services tailored to the company’s needs. During the last three years, 36 new start-up companies were established in the Technopark, over 310 engineers have received employment and Technopark companies realized exports worth of 29 million euros. Besides start-up companies, there are currently 29 growing tech companies employing more than 300 highly educated staff. The realized income of companies in the Technopark Belgrade was more than 16 million euros in 2017. Switzerland is proud to have contributed to the development of the Science and Technology Park Belgrade that supports both innovation and young people in Serbia.

Prepared by: Tamara Zjacic



to build their entrepreneurial capacities and become sustainable. What kind of finance models does this network offer and who are its principal beneficiaries?

Philippe Guex The Impact Angel Network Serbia supported by the Swiss Government has the objective to raise the investment readiness of both angel investors and early-stage startups in Serbia. There is currently an early-stage financing gap in Serbia that prevents startups from growing and entering international markets. One of the reasons for the gap is the fact that Serbia does not have incentives for po-



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efficiency and product life, the new digital capability will boost reliability and mitigate outages through preventative action." ABB also announced the launch of **ABB Ability™ TXplore**, a service solution that deploys a submersible transformer inspection robot. The wireless robot can be maneuvered through a liquid-filled power transformer to perform fast, safe and cost-effective internal inspection, which can be shared remotely close to real time with global experts. This innovative approach, another world-first, enhances safety by reducing personnel risk, reduces down time with inspection performed in hours versus days and brings inspection costs down by 50 per cent or more. ABB is also showcasing its recently introduced **ABB Ability™ TXpert™** distribution transformer, the world's first digital distribution transformer. TXpert provides intelligence to maximize reliability, optimize operating and maintenance costs and manage the asset more efficiently, building on the ABB Ability™ platform and connected devices to generate actionable intelligence. This product is the first of its kind to integrate sensing technology directly into the transformer during the manufacturing process, resulting in higher accuracy. Transformers perform the important fun-

ction of adapting voltage levels, stepping up for efficient long-distance high-voltage transmission, and stepping 'down' for distribution and safe use by consumers. They also help maintain power quality and control. ABB pioneered transformer technology in the 1890s and has since been at the forefront of record-breaking innovations including the world's most powerful HVDC and AC transformers at 1.1 and 1.2 million volts respectively. As the world's largest transformer manufacturer and service provider ABB has an unparalleled global installed base and a vast portfolio of power, distribution and special application transformers.

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products. As title partner of Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 135,000 employees.



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There is no Raise of Awareness without Infrastructure

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The circular economy is a more comprehensive term, and one part of it is recycling. The circular economy begins with product design, control of supply chain, delivery, consumption and other activities. People often apply the circular economy, and they are not even aware of it. A certain circle of experts and non-governmental organisations have begun to deal with the circular economy in the last five to seven years. However, most of the academic experts are not fami-

liar with this term at all, and our interlocutor Vedad Suljic, Director at Regional Education and Information Centre for Sustainable Development in South-East Europe – non-governmental organisations from Bosnia and Hercegovina, claims that this is not strange.

Vedad Suljic has more than ten years of experience in the economic analysis of various energy and environmental related projects. He graduated at the School of Economics and Business Sarajevo and completed the Specialist study at the Faculty of Mechanical Engineering. During his career, he worked with national and international development organisations and different IFIs such as EBRD, World Bank, EIB and other. In the past, he was a guest lecturer at several Universities in Bosnia and Herzegovina.

EP *When did the circular economy become topical in our region and how would you rate its progress hitherto?*

Vedad Suljic If the actuality is measured by the number of published articles on portals or by the use of the term in conversation then we could say it is far from the actual. We have to be aware of the fact that our companies, regardless of their business and size, have significant problems in the essential part of their business, because they operate on unregulated markets. That situation often makes it impossible to think about anything else except how to survive on the market. This, of course, should not serve as an apology for not considering and applying circular economy, but, according to my judgement, it is one of the reasons why the circular economy is less popular than in developed countries.



Vedad Suljic, the Director at Regional Education and Information Centre for Sustainable Development in South-East Europe

EP *What is the percentage of recycling in FB&H, and do you know the statistics of former Yugoslav countries in this area? Which materials are most recycled?*

Vedad Suljic The Agency of Statistics of Bosnia and Herzegovina publishes periodic reports on waste management, and according to those data, 3.5 per cent of municipal waste was selectively collected in 2017. Thus, recycling of municipal waste is still lower than this number. On the other hand, waste collectors treat about 50 per cent of the waste collected in one of the possible ways (reduce, reuse, recycle, use as energy fuel), where recycling is one part. Unfortunately, there is no precise statistics on recycling is one part. Unfortunately, there is no exact statistics on recycling rates, although it is estimated at less than 10 per cent for all types of waste together. But, even without this statistics, it is clear that recycling in FB&H is at a very low level. Recycling begins on the spot on which waste is created, so proper sorting is needed. Unfortunately, this is significantly neglected in Bosnia, which makes recycling more expensive. A similar situation exists in other neighbouring countries, except in Croatia, which is the most advanced in this respect, mostly due to joining the European Union that in some way “forced” them

THE EXAMPLES OF SUCCESSFUL COMPANIES IN THE REGION

Vedad Suljic emphasises that recycling is often misunderstood in our region and that people sometimes confuse recycling with other treatments. “Several companies obtain new products based on recycling. “Omorika PET” from Dobož collects, recycles and produces PET bottles, “Eko-Servis” from Tresanj produces distilled water from the waste emulsion, and there are of course other examples. I am familiar with the fact that companies “Tetrapak” and “Elopak” from Serbia recycle multilayer package. Some companies have started doing comprehensive recycling of car tires in the region (“SGI” in FB&H, “Gumiimpex” in Croatia, “EcoRecycling” in Serbia, etc). As far as I know, there is no company on the territory of former Yugoslavia that is 100 percent committed to circular economy, as there are many barriers for the implementation of that”, said Vedad stating that some of these obstacles are international trade, customers’ perception, (non)commitment of top management, lack of infrastructure and strategic partners and many others.

to change their way of doing things. Traditionally recycled materials are the ones which are relatively easy collected such as metal, paper and certain types of plastics, and specific kind of hazardous waste, while glass is not recycled in all countries of the region (for example, glass is not recycled in FB&H, but it is collected for export in rare cases). Of course, in the new digital time, a large amount of electronic waste have been collected.

EP *Do you have an overview of what is being done to increase the percentage of recycling in our region, because this*

Our companies have significant problems in the essential part of their business because they operate on unregulated markets. That situation often makes it impossible to think about anything else except how to survive in the market



percentage is significantly lower concerning the EU countries and what are the regulations that would manage to change this?

Vedad Suljic Since all countries in the region are located in the EU's vestibule (except Croatia), and that new rules are waiting for us, it is expected that this area will be changed and arranged sooner or later. How this will affect the overall economy and who will be the winner and the loser remains to be seen. One should bear in mind that waste is one of the most costly, if not the most expensive, chapter in the EU and that regulations are becoming more strict and more challenging to reach that is, more expensive every day. The more we are unprepared today, the higher costs we will pay tomorrow. It was precisely the waste sector which was one of the most important culprits that pushed Greece into economic crisis a few years ago. I believe that the situation in the area of waste management will change significantly in the next 5 to 10 years, especially in Serbia and Montenegro that are several steps ahead of FB&H in the context of EU accession.

EP *Since the definition of circular economy is produce-consume-recycle-reuse, is the public in your country sufficiently familiar with the items that can be reused, and which of them can be recycled?*

Vedad Suljic One of the circular economy modalities is sharing model, and platforms such as Airbnb and others, have enabled the utilisation of existing resources, such as

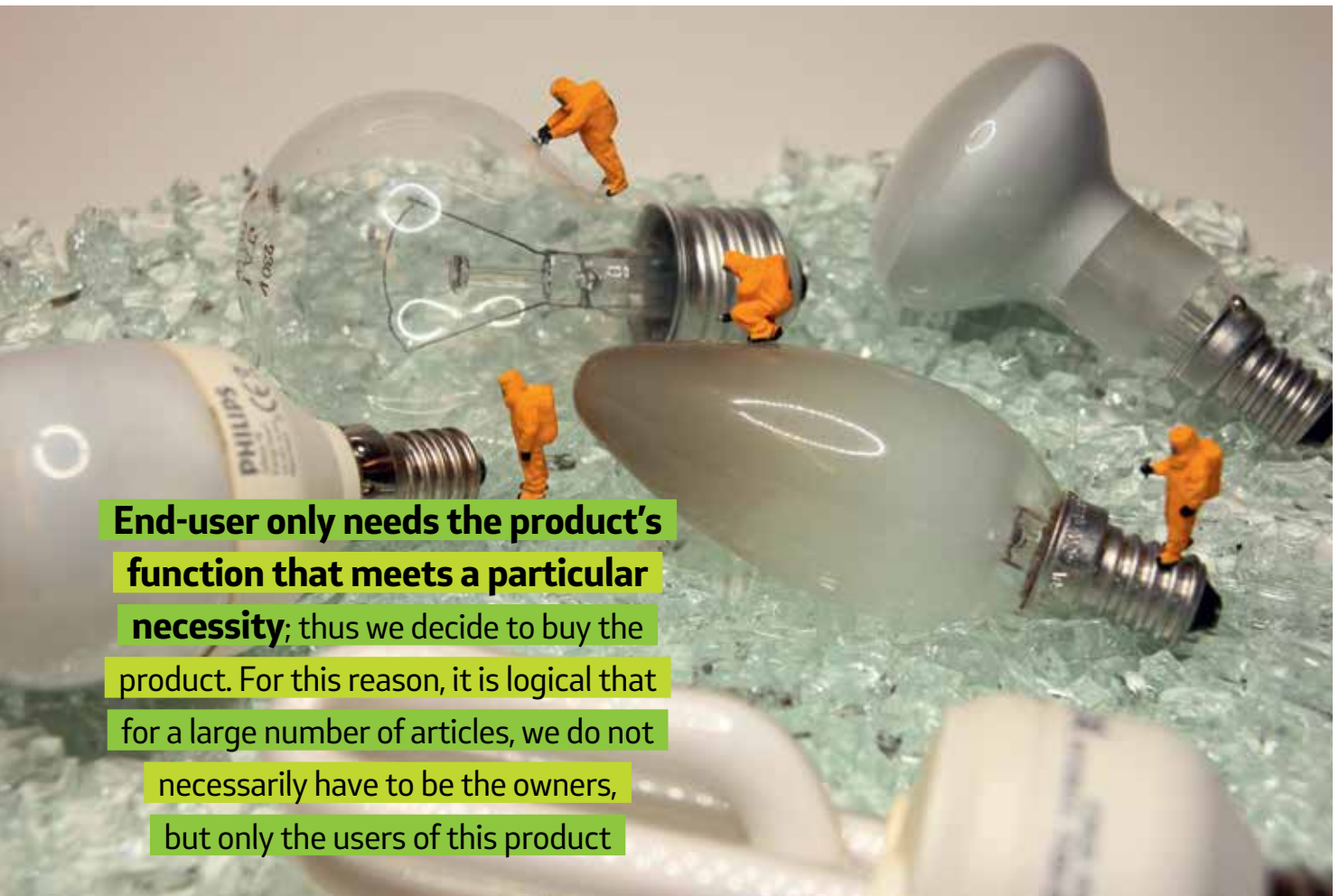
empty flats, to meet specific needs as in terms of accommodation. In this case, the need for the construction of new capacities is reduced or even eliminated, which means that a new amount of waste will not be generated. This is a simplified example so that people could understand that they have participated at least once in something that is the circular economy. People are quite aware of what needs to be recycled and what can be reused, but there is no infrastructure, neither legal nor physical, which would also stimulate recycling. People are not motivated to recycle when there are containers for mixed waste in front of their houses and buildings in 99 per cent of cases. That situation demotivates even the most conscious citizens; thus there is no awareness without the infrastructure. It's a real wonder that everyone knows how to separate waste when they stay abroad, and when they return home, they continue with their old customs. Therefore, the construction of infrastructure and raising of awareness must go hand in hand.

EP *What is the situation in the economy of the region when it comes to representation of waste selection and recycling?*

Vedad Suljic When it comes to this, I am not entirely familiar with the situation in other countries except FB&H. While working on a study recently, we have conducted a survey which showed that over 80 per cent of companies in FB&H performs sorting of waste, which is an encouraging piece of

Photograph: Pixabay





End-user only needs the product's function that meets a particular necessity; thus we decide to buy the product. For this reason, it is logical that for a large number of articles, we do not necessarily have to be the owners, but only the users of this product

information at first glance. One part of that waste is further treated, but a significant part eventually goes to landfills. Most of the companies see waste as a burden and expense, and its economic value is rarely noticed.

EP *For some time now, there has been a servicing option which some companies have introduced as a type of product in the world, such as the world-renowned "Michelin" company, which now offers the opportunity to pay for a tire per travelled kilometre, and there is even office equipment such as printers that are paid per printed page. Are there any similar examples in the region and could you explain this concept to our reader in more details? Do you think that something like this can be useful?*

Vedad Suljic The right question for the end. Generally speaking, an end-user only needs the product's function that meets a particular necessity, thus we decide to buy the product. For this reason, it is logical that for a large number of articles, we do not necessarily have to be the owners, but only the users of this product. For example, a washing machine is not necessary, but its function to do the laundry, and so on. The future of technological products is mainly going to be based on this, that is, on the transition from possession to product rentals. "Phillips" is now selling the service of lightening (pay per lux), "MudJeans" charge the service of wearing pants, and "Vodafone" sells the service of talking and texting.

The reasons why many companies have switched or will switch on the circular economy model, are reflected in benefits, such as raw materials (less raw materials for new products), environmental benefits (pollution reduction), customer retention (customer loyalty increases) and information value (companies obtain direct feedback from customers regarding their products). I do not know whether any company in the region offers its products under the label of the circular economy, but the number of companies that work according to these principles is not negligible. A good example is ESCO companies (the Energy Service Company) that offer the comfort service (e.g. heat or light) instead of delivery of heat or electricity to their customers. The company "Ecoton" from Sarajevo offers on-site printing services instead of selling printers and toners, also "Kabletech" offers tool rental. Why should you buy a drill only to use it for 30 minutes in your lifetime? Therefore, car and bike sharing platforms are also models of circular economy, and they are represented in all countries of the region. The carpooling option is also a model of circular economy, and it's also represented in the countries of the area (Uber, BlaBlaCar, etc.) We have to be aware that this is the result of a response to the market needs and that these are not deliberate tailor-made circular economy models, but they should not certainly be neglected yet rather supported and promoted.

Prepared by: Nevena Djukic

PRESENTING "RESALTA"

Estimated Savings as a Financing Source for the Projects in Energy Efficiency



Ankica Barbulov, the director of "Resalta" in Serbia



Luka Komazec, the managing director of the "Resalta" group

When companies, which are major energy consumers, take that necessary decision on the implementation of energy efficiency measures, on their way to a better and more cost-effective energy model, they face the challenges of defining the best solution and plan for financing such a project. For many years, a safe transition from high energy consumption to its efficient use, according to the specific needs of clients, has been provided by "Resalta", the leader in energy efficiency. Through the ESCO model, "Resalta" develops, finances and completes energy savings projects for clients ranging from private companies to the public sector.

The Prominent Examples of Cooperation Between "Resalta" and Companies and Local Governments

Although there is a large number of important projects that "Resalta" has implemented in the region, the energy rehabilitation of Ljubljana deserves to be particularly singled out. The project, which "Resalta" implements in the consortium with "Petrol", includes 49 buildings, and the measures encompass reconstruction of the facade, heating and cooling systems, lighting, carpentry and thermal insulation coatings of the buildings. This type of cooperation will bring to the city of Ljubljana savings of more than 8 MWh per year, while CO₂ emissions will be reduced by 3,000 tons per year.

"Resalta" has carried out as many as eight projects with the Slovenian company "Gorenje" from Velenje, out of which three are currently in the implementation phase. The projects comprise lighting modernisation, two CHP plants, cooling systems for the production sector, energy management and compressed air systems. Total savings from all the projects reach tens of MWh per year, whereas CO₂ emissions are reduced by several thousand tons a year thanks to the "Resalta"s efficient solutions. This instructive example serves as a demonstration of many possibilities for improving energy efficiency in industrial facilities - since the biggest potential lies within large energy consumers.

When it comes to Serbia, "Resalta" carried out the first project within the public-private partnership with the City



“RESALTA” – THE REGIONAL LEADER IN ENERGY EFFICIENCY

The company was founded in 2011 under the name GGE, which is an acronym of the names of the three founding companies: “Gorenje”, “Geoplin” and “Energetika Ljubljana”. The development of the company exceeded all initial expectations, the shareholder structure changed, and the new name was designed to reflect the focus on high performance in doing business with partners. “Resalta” is one of the fastest growing companies in Slovenia and is present in seven countries throughout the region such as Serbia, Croatia, Bulgaria and Macedonia. Ever since it was founded, “Resalta” has carried out more than 200 projects, and as a result, the CO₂ emissions have been reduced for over 30,000 tons, and customers have saved over 300 GWh of energy. In addition to energy efficiency, “Resalta” is specialised in energy production from renewable sources - a cogeneration project of 5MW in Croatian Slatina is the first step of an ambitious plan for clean energy development.

of Pirot for the distribution of heat energy, which helped in achieving energy efficiency in four local schools by regulating the delivery of heat energy. Biomass boilers provide heat from renewable sources, and while the city benefits from financial savings thanks to this project, and students and teachers from a reliable heating system, switching from heating oil to biomass helps in reducing CO₂ emissions by 420 tons per year.

In addition to the first public-private partnership, “Resalta” also implemented important projects for the



modernisation of public lighting. Undoubtedly the biggest among them is the project of public lighting in the Balkans as a result of the contract between “Resalta” and the city of Krusevac, which included the replacement of 12,545 lamps with energy efficient LED lamps. Through this project, the city generates 80% savings in the energy consumption for lighting after the expiry of the contract, and CO₂ emissions are reduced by 2,772 tons per year.

The Most Significant Advantage of the Cooperation with “Resalta”

“Resalta” offers to its clients not only project financing but also technical expertise. According to Luka Komazec, the managing director of the “Resalta” group, their engineers

have gained extensive experience over many years of developing various energy efficiency projects. “Their knowledge enables us to identify the best solutions for each client, depending on individual needs and energy consumption. Besides, we take on all the risks and responsibilities for technical solutions, so customers can fully rely on us and our solutions. The “Plantaze” project is a good example of a project that is fully tailored to the client - the new steam boiler will use vineyard prunes residues as an energy source. Since the prunes residues are a by-product of the primary activity, the cost of energy will be reduced to zero for the client”, says Luka Komazec.

What Are the Benefits for a Client from Using the ESCO Model

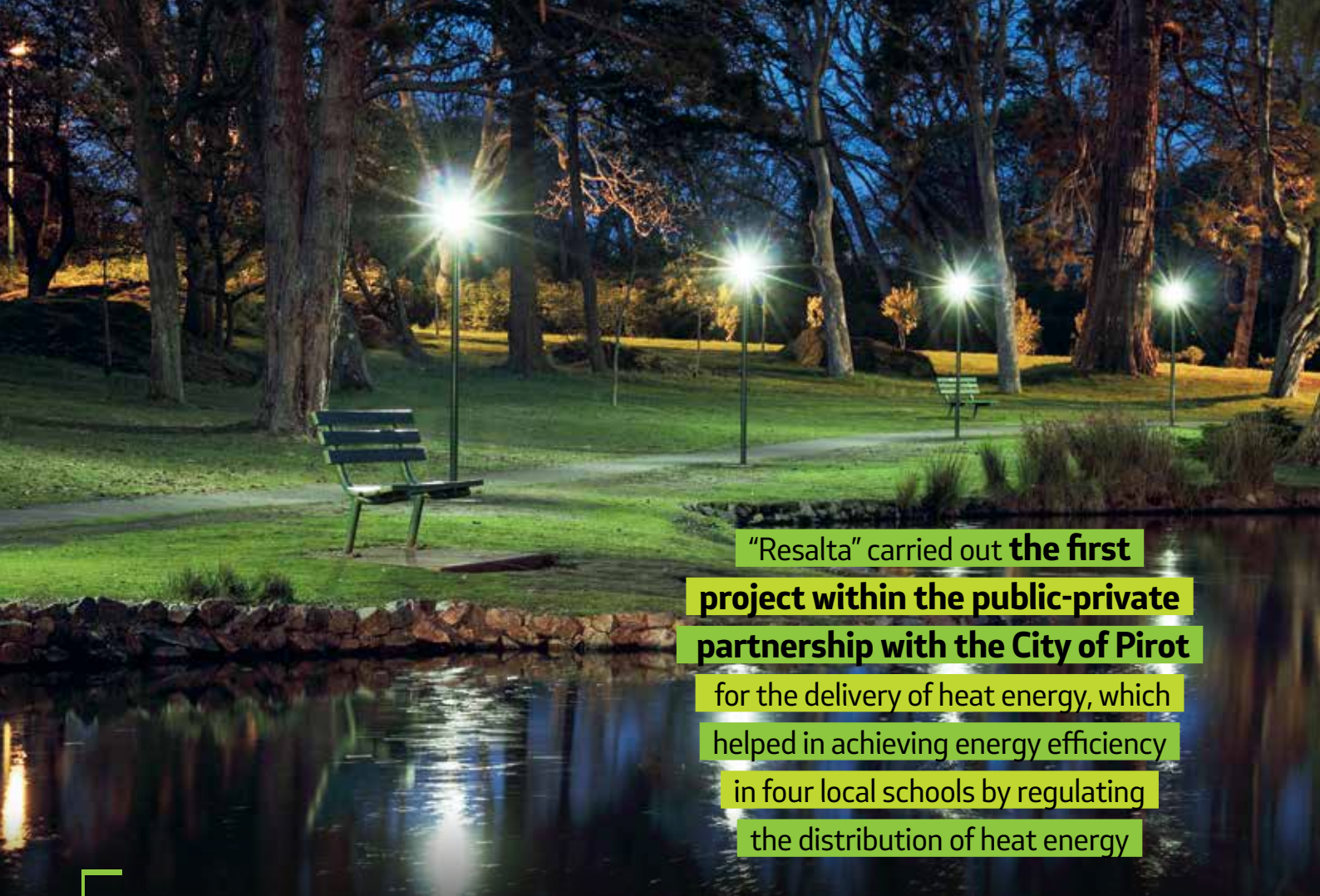
The term ESCO* is a shortened name for the concept of energy services that implies that energy efficiency projects are financed from the estimated savings. As an ESCO company, “Resalta” not only performs energy audits that serve as

* *Energy Saving Company* – refers to companies providing energy services on a turn-key basis, which include the introduction of energy efficiency measures and the implementation of projects in the field of renewable energy sources

a basis for development and implementation of projects, and for maintenance of the system, but also finances projects. Ankica Barbulov, the director of “Resalta” in Serbia, explains what kind of guarantees the ESCO model offers. “Since we get a return on investment from the savings that the client makes, it means we have to guarantee the projected savings. We bear the technical risk of the project, and we are responsible for the success of the implemented measures.”

Companies are getting increasingly familiar with the ESCO model, but the potential for such projects is still unfulfilled. Through the model of public-private partnership, local governments and public companies are getting more inclined to identify ESCO companies as an ideal partner for the implementation of projects, so there is progress in the sector to some extent. Ankica Barbulov says they are aware that this model sometimes sounds too good to be true, when in fact it’s only about adapted technical solutions





“Resalta” carried out the first project within the public-private partnership with the City of Pirot for the delivery of heat energy, which helped in achieving energy efficiency in four local schools by regulating the distribution of heat energy

“RESALTA” IN PICTURES AND NUMBERS

LIVAR COMPANY

The Slovenian company “Livar” is specialised in the production of ductile iron and owns several factories throughout the country. For this client, “Resalta” first modernised the compressor station in Ivančna Gorica (compressed air is crucial for the primary business of the company), along with the installation of a new screw compressor, and thus reduced power consumption by 24 percent. Then a compressor station was also modernised at the factory in Crnomelj, by installing three compressors of different power, with a waste heat recovery system of the station. Heat waste is then used, instead of the heating oil system, for drying painted products.

ANNUAL SAVINGS IN NUMBERS:

- Electric energy 807 MWh
- Heat energy 686 MWh

KRUSEVAC

Concerning the public sector, the project for the modernisation of lighting in Krusevac included 12,545 lamps that were replaced by energy-efficient LED lights. In this case, the installed capacity was reduced from 1,664 kW to 356 kW, which also helped to reduce

CO₂ emissions by 2,772 t per year, while the financial savings for the client are expected to be 80 per cent after the expiration of the contract.

UNIVERZUM

“Resalta” has implemented a new industrial project with Serbian brick factory “Univerzum”, which owns several production sites throughout our country. In the effort to make “Univerzum” state-of-the-art brick producer in the region, the company’s management has chosen to improve its energy efficiency, therefore “Resalta” installed units for compensation of reactive energy in the factories in Arandjelovac and Indjija, in order to reduce the high costs incurred by the distribution system operator of electrical energy. By setting the reactive power compensation unit after the power meter, the solution provided by “Resalta” effectively ensures the correction of the power factor and immediately reduces the load of the reactive power on the distribution network, thereby reducing the net charge shown in the account for consumed electricity. The correction of the power factor by using reactive energy compensation units is a solution that is easily implemented and can generate huge savings for all types of industrial production. This way the “Universe” company will reduce the electricity bill up to 7 per cent.

and mathematics - and of course choosing the right ESCO partner. "Overall, things are moving in the right direction, and we think that in the next few years this movement for improved energy efficiency will become rife in Serbia", says Ankica, supporting her belief with the fact that at the time in Slovenia the beginning of the implementation of this concept had a similar flow.

The benefits of the ESCO model are not limited to merely financial ones. Moreover, that is only a small portion of what ESCO offers to clients. Luka Komazec says that the client can entirely rely on "Resalta" solutions because their engineers have been developing such projects for many years, and have acquired experience that is difficult to gain in another business. "Therefore, we choose the best solutions for our clients that are tailored to their specific needs. Also, we are responsible for all the installations (mechanical and electrical), and we also carry out the maintenance. If it happens that there is a failure in the equipment or for some reason the client hasn't got the expected savings, the consequences will be borne by Resalta", says Komazec. The project investment doesn't appear on the client's annual balance sheet, so the ESCO model has only advantages.

How Does Precisely "Resalta" Finance Its Projects

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"Resalta" has a specific way of providing funds for its projects, which implies project financing without recourses (i.e. without unlimited guarantee of the parent legal entity of the founder of SPV** that manages the project). The di-

** *Special Purpose Vehicle* – a new company for special purposes founded by the investor, for example, as the carrier of only one project



rector of the Belgrade branch of "Resalta" says that estimates on the possibility of repayment of bank loans are related to the projected cash flow of the project as the sole source of repayment.

"That is the exact reason why in the estimation of commercial banks this kind of financing bears a higher risk degree. The banks in the region we operate in are not always willing to follow through all three phases of the project (development, implementation and warranty period). Mostly, they decide to finance the implementation phase", stresses out Barbulov. Bearing this in mind, "Resalta" makes efforts to find alternative sources of financing such as investment funds that make short-term investments in debt instruments (commercial paper) to bridge the implementation period when it is of vital importance to provide the most funds for the project implementation.

The implementation of energy efficiency measures can help in reducing consumption and exploiting the full potential of existing energy systems. However, this is not the only thing to benefit from. Having cut the energy consumption the funds for other investments are released, while at the same time CO₂ emissions are reduced, which helps the company to be assigned to a class of socially responsible businesses. There is no doubt that energy efficiency is among the measures for green development that can be introduced in the easiest and the cheapest way.

Next year "Resalta" will continue to expand into new markets, and also to develop the ESCO projects across the



region. Luka Komazec says that the growing demand for such services is evident as a result of the rising awareness on all the ESCO benefits. "In addition to projects for implementing energy efficiency measures, we continue to develop renewable energy projects, such as a 5MW cogeneration plant in the Croatian municipality of Slatina. That is the future of 'Resalta' because one of our key goals is to increase the share of green energy in the region", says Komazec. ■

A photograph of an orange EV charging station in a parking garage. The station is a white rectangular box with a green light and a logo, labeled 'EVlink' and 'Schneider'. A blue charging cable is plugged into a dark-colored car. The background shows the orange walls and concrete floor of the garage.

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HOW TO BREATHE IN A NEW LIFE TO THE OLD THINGS

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Isabel Airas, an advisor for the circular economy at the Chamber of Commerce and Industry of Serbia

Isabel Airas, an advisor for the circular economy at the Chamber of Commerce and Industry of Serbia, has shared her international experience in the field of environmental protection with us and has revealed how we could be the circular economists spending a very little money ourselves. It is pretty simple. We should not take some material, make a product, use it and throw it away but take some material, make a product, use it, remake it (or fix it), reuse it and so on.

EP *If you meet a time traveller from one of the previous centuries who does not know anything about the circular economy how you would explain the term to him?*

Isabel Airas For a long time, our economy has been linear and it still mostly is that way. That means that raw materials are used to make a product, and after its use, any waste is thrown away. We want “take-make-consume-throw” pattern to come to an end and to be replaced with a model of a closed loop. We want the linear economy to be transformed in the “take-make-use-make-use...” concept. We want to make that line a circle.

EP *What are the benefits of that sort of waste management?*

Isabel Airas Those who are not that familiar with the circular economy consider it as waste management, which is not entirely correct. Advocates of the CE want the matter to circle incessantly and they do not want waste at all. The

benefits from it are different for the different actors in the process. For example, the company benefits by saving the materials and energy needed for the creation of a new product. Above everything, it is our environment that benefits the most.

EP *Plenty of people applied for the Circular Economy Academy (ACE). Do you think of that as a sign that Serbian people are heading towards a more sustainable future? What is a general state in our country when it comes to the circular economy?*

Isabel Airas We were positively surprised by the number of people who applied for the Academy. However, the circular economy is only at the beginning in Serbia, and a lot of hard work is needed to implement it fully. Since I am an optimist by nature, I believe that we are heading in the right direction and that the ACE is contributing to it.

EP *What is your opinion – why we do not recycle more? How would you nudge people to separate their trash?*

Isabel Airas I think the substantial segment of building a recycling culture in a country is raising awareness from an early age. It is a long-term process, and the budget for it is not that important. The key factor in this field are people who are aware of this issue. If the education starts in during young age, kids, for example, would ask their parents why they do not separate their

trash at home the way they do in school.

I grew up in Germany, where waste separation is an entirely usual habit. Everyone does it. Recycling in Serbia is so much more difficult since the infrastructure for it is not properly implemented. I live in Senjak, and there are a lot of recycling bins in the main streets, but people don't know or are too lazy to use them correctly. Therefore, I do not believe that my recyclables are taken to recyclers when I throw them into these bins.

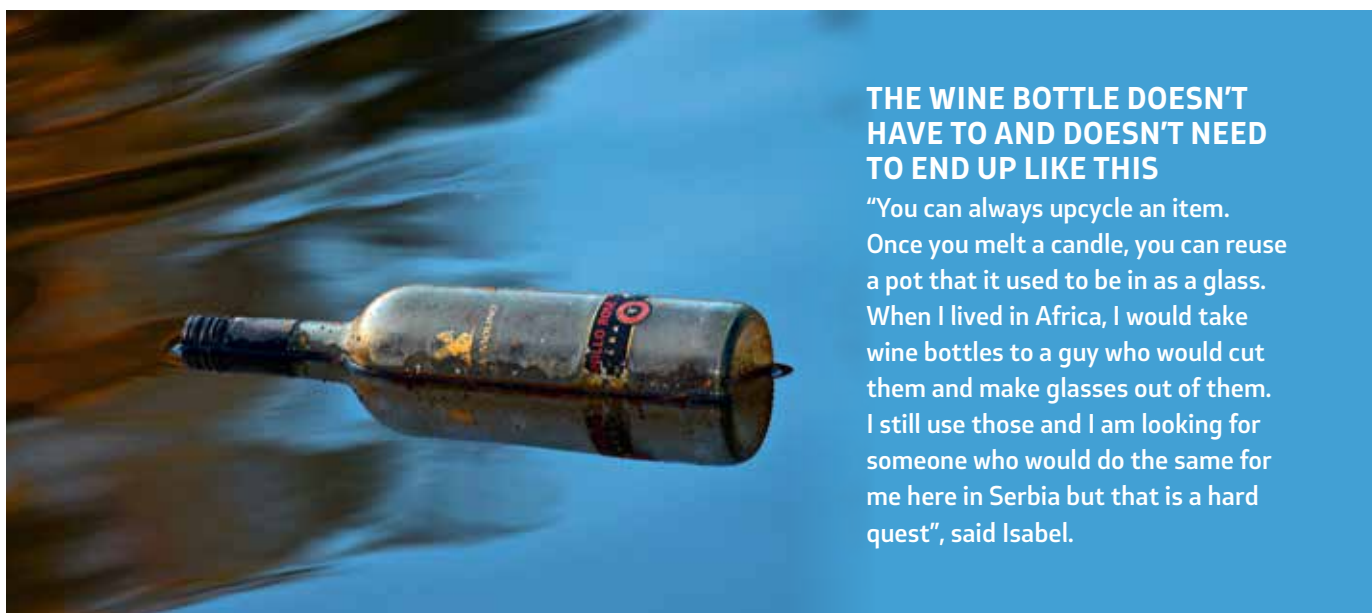


EP *What are the main problems that the Republic of Serbia is facing in implementing the circular economy policies?*

Isabel Airas A big problem is the rotation of people within the ministries. When I got to this position, two years ago, we had a meeting with two employees from the Ministry of Economy, and we educated them about the importance of this concept. They understood its fundamentals but several months later they were gone from their jobs there. I think that sort of political shift is terrible when you want to implement a new idea successfully.

We want to circle the linear economy.
The CE supporters are striving for a circulation of matter that is never ending and waste that is never creating

I believe it is essential that we have CE experts in each ministry because this concept asks for a multidisciplinary approach: environmental protection, finance, economy... Maybe it would be too ambitious to expect a department in each ministry, but it would be good if we get an opportunity to have an insider specialist or two who



THE WINE BOTTLE DOESN'T HAVE TO AND DOESN'T NEED TO END UP LIKE THIS

"You can always upcycle an item. Once you melt a candle, you can reuse a pot that it used to be in as a glass. When I lived in Africa, I would take wine bottles to a guy who would cut them and make glasses out of them. I still use those and I am looking for someone who would do the same for me here in Serbia but that is a hard quest", said Isabel.

Once she has completed master studies in the field of the environment and natural resource management, Isabel Airas has participated in the numerous activities on the front of preservation of the natural surroundings and fight against climate change in which she has helped countries on different continents (Germany, Malawi, Columbia, Saudi Arabia). At the moment, she is working in the position of an advisor for the circular economy at the Chamber of Commerce and Industry of Serbia. In our country, she took part in some other green projects such as Climate-KIC and the Circular Economy Academy.

would push the direction of policies in alignment with the CE principles.

EP *What are the other environmental issues that are found on the path of Serbia finally opening the well-known chapter 27?*

Isabel Airas If I am not wrong, the vast amount of investments is expected in waste and wastewater management, and that does not seem possible to me to happen any time soon.

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EP *What are the companies, developments and work practices aligning with the principles of CE that are interesting to you?*



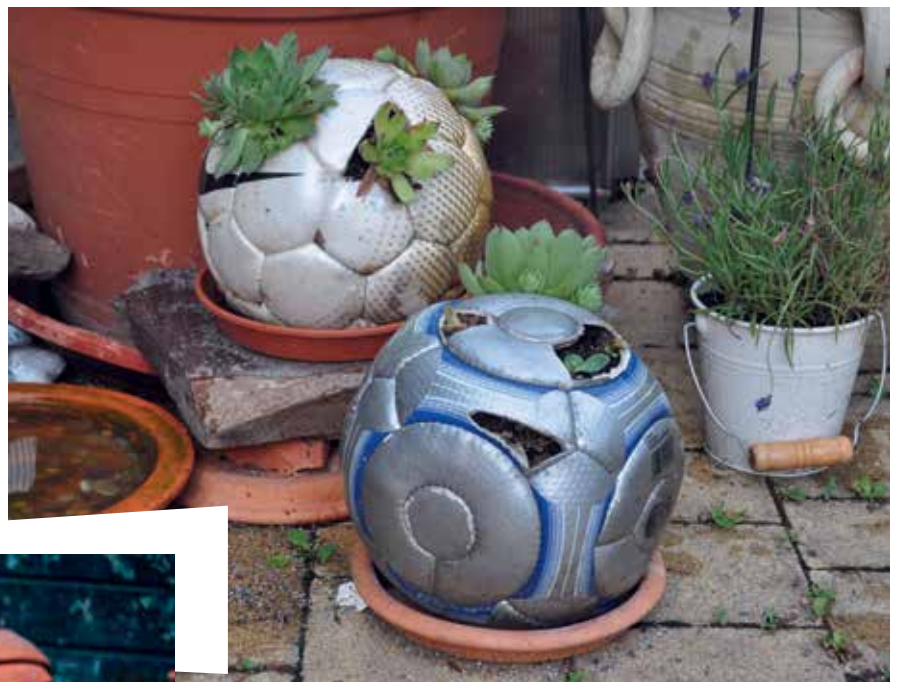
Maybe it would be too ambitious to expect a department in each ministry, but **it would be good** when we would have an opportunity **to have a CE insider-expert or two**

Isabel Airas Second-hand stores are one of a kind place that you could go to and take part in the idea. In Germany, selling and shopping for baby clothes on eBay is widespread which is a perfect way to be environmentally and socially responsible. Babies grow fast, and you are left with a bunch of barely worn clothing that you could pass onto someone new. That is why we sell it and buy it in packages for a different age on eBay. Once your baby has grown out of its clothes, you put all of it on the Internet, and someone who has a child of that age buys it. It is usually still in an excellent, and it would be a shame if it went to waste. I do not understand why this scheme would not be adopted here in Serbia. Maybe the reason is that the middle level of wealth is more present in Germany and people are less poor.

Another solution to this situation would be the invention of apparel that grows with your baby. I saw it on Face-



The most important segment of building a recycling culture in a country is **raising awareness from an early age.**



book but honestly, it is not the most appealing, and it is still being developed. Speaking of things that grow with your child, there is a bed by IKEA that is becoming bigger parallelly with your kid. This furniture company is involved in the circular economy in multiple ways. In some of its stores across the globe, you could get a discount for new furniture if you bring a piece of old.

Interview by: Jelena Kozbasic



WILO ON THE GLOBAL
AND DOMESTIC MARKET –
INNOVATIVE SOLUTIONS
IN THE PRODUCTION OF
PUMPS AND SYSTEMS



As a consequence of the ErP Directive, it is estimated that **23 terawatt hours of electric energy will be saved** in the EU by 2020, or in other words, **the CO₂ emissions will be reduced by 11 million tons per year**

Recently, the German company Wilo was presented with the renowned National Sustainability Award 2018 thanks to its high-efficiency products and comprehensive approach to sustainability. It seems as a well-deserved triumph to be named as one of the top 3 of “Germany’s most sustainable large companies”, having in mind that Wilo, with its innovative solutions in the production of pumps and systems, improves the market around the world making an effort at the same time to help mitigate the ecological consequences due to climate change and water shortages.

Wilo’s global success is reflected in the position of the Serbian branch of this company at the local market as well as in their approach to local clients. The Service manager Aleksandar Momcilovic explains what are the comparative advantages of Wilo pumps and systems.

Aleksandar Momcilovic As one of the world’s largest manufacturers of pumps for heating, cooling and air conditioning, and also a synonym for the German tradition and quality, Wilo campaigns for the preservation of the climate and the environment with its production of energy-efficient products. The imperative of our business policy is the quality, which is accomplished holding on to the idea that customer satisfaction is our obligation and job, and that is a precondition for production according to the most up-to-date world standards of quality and reliability. This also implies significant investment in research and development, and continuous improvement following contemporary world standards, which WILO imposes on the market. Our innovative solutions set standards in the further development of pumping technology in the world. Energy-efficient systems, user-friendly techniques and tailor-made solutions – those

are the qualities of our offer, but in the future customers will also determine some of the main elements that the equipment should have.

EP *Offering a great product or service hasn't been enough for a long time. It's becoming ever so important how the production affects the environment and how much resources are used. As it seems, Wilo pays great attention to sustainability, so what's the sustainable level of the Serbian branch?*

Aleksandar Momcilovic As manufacturers and equipment suppliers, we have long respected these needs of our customers, so we adjust our equipment (pumps and pumping systems) to our users' needs. Our high-efficiency equipment greatly reduces emissions of harmful gases CO₂ into the atmosphere, and thus positively affects the environment. Reliable and efficient equipment is of huge importance in today's production facilities and processes, as unplanned stoppages due to the equipment failure bring about huge costs. For that reason, it is very significant that the equipment we supply in addition to being energy efficient is also reliable. As a result, the costs of production plant and maintenance are reduced, production processes do not have to undergo unnecessary stoppages and halts, the user of the equipment is more satisfied and focused solely on production, which eventually brings good results. It is necessary to know that the pump is only a component within the system. Being adjusted with the complete installation, it can reach the full potential. Therefore, it is essential that our equipment is safe and reliable so that the operation of the entire system is secured. The best way to a stable operation of the equipment is timely and continuous monitoring and servicing, without unplanned failure, damage and deadlock.

EP *In Serbia, Wilo also provides trustworthy support throughout all phases of the project - from planning, to dimensioning, to putting into operation and maintenance. You also organize workshops about the news in the sector of pumping techniques.*

Aleksandar Momcilovic We believe that our service should cover the entire economic life of the Wilo products which you use. No doubt it is valuable for end-customers that the company WILO Belgrade provides WILO SERVICE which is designed according to the highest company service standards. Adjusting to the customer's maintenance concept and as experts for this type of equipment, we suggest being involved in maintaining of the Wilo pumps, pumping systems and other accompanying devices. The best way to accomplish this is through a maintenance contract, which determines in detail what is the subject of prospects and maintenance, how it is implemented and what are realization terms as well as all other mutual obligations. In addition to a competent and responsible approach that you can expect from the Wilo representatives, this type of business-technical co-



There is a **potential to save as much as 90 per cent in energy consumption in the sector for air conditioning, heating and cooling in Serbia** if old unchecked circulator pumps are replaced by new high-efficient pumps with low energy consumption

operation also enables you to benefit from a partner status when it comes to all possible services, a privileged price for spare parts and a number of other benefits. The Wilo Belgrade Service is one of the most equipped service provider of the pump technology in the region, and in addition, we offer a complete vibro-diagnostic service, coaxial adjustment, ultrasonic flow measurement and thermo vision diagnostics, professional and competent analysis of conditions and malfunctions, determination of the costs of the economic life of pumps and systems, etc.

EP *Can you give us an introduction on the Wilo Energy Solution?*

Aleksandar Momcilovic With the Wilo-Energy Solutions, our company introduces efficient measures for the reduction of energy consumption. The energy revolution seems to be one of the biggest ecological and economic challenges in the next ten years. The country that has set the precise goals for a successful energy revolution is Germany. By 2050 in this country, not only will 80 per cent of electricity come



from renewable energy sources, but also primary energy consumption will be reduced by 50 per cent compared to 2008.

Wilo has been involved in the energy efficiency for decades. Most pumps and pump systems that are in use worldwide are technologically outdated. It's become evident that in replacing old unchecked pumps with modern highly

Wilo-Energy Solutions is our service that **promotes the proactive replacement of pumps** that are still functional (but they are old, unchecked and inefficient) with **Wilo high-efficiency pumps**



efficient pumps lies a considerable potential for reducing energy consumption. As a result, carbon dioxide emissions can be significantly diminished on a global level. The Wilo-Energy Solutions is our service that promotes the proactive replacement of pumps that are still in use (although old, unchecked and inefficient) with the Wilo high-efficient pumps. Besides the benefits for the environment (less CO₂ emissions into the atmosphere), we can also give another argument such as lowering energy costs up to 80 per cent. Additional advantages are to feel secure about the future, have a good supply and hygiene.

For more information about the Wilo Energy Solutions, you can contact Wilo Belgrade office and make an appointment. We will explain all the benefits of a proactive pump



replacement and fill in all prospects on our highly efficient pumping solutions.

EP *What are the most significant problems in the pump usage in our country and where do you see possibilities for improvements of greater energy savings and longer economic life?*

Aleksandar Momcilovic Companies in Serbia don't have a strong awareness of energy saving and environmental protection, but there is slight progress. Continuous education, training, the fact that for several years we have been doing courses and promotion of energy efficient solutions and the opportunities which are enabled and accomplished by this equipment, all of that have brought about the change in how our clients perceive such equipment, and in what they now require. Therefore, there is an increasing demand for highly efficient and energy-saving equipment, which makes us very glad. In our range, we have products that can fully meet all customer requirements, whether they need equipment for thermo-technics, water supply, wastewater treatment

and transport, or the industry. There is a potential to save as much as 90 per cent in energy consumption in the sector for air conditioning, heating and cooling in Serbia if old unchecked circulator pumps are replaced by new high-efficient pumps with low energy consumption. Old unchecked pumps used in old systems cause huge energy consumption, and for reasons given, high operational costs are imposed during their exploitation cycle. To considerably reduce the energy consumption in circulator pumps in the EU, the ErP Directive (Energy-related products directive) was introduced. In several steps, this directive imposes rigorous energy efficiency criteria for circulator pumps with wet rotor and pumps' electric motors with a dry rotor, but also serves as a huge innovation encouragement for developing new, more efficient pumps and systems. As a consequence of the ErP Directive, it is estimated that 23 terawatt hours of electric energy will be saved in the EU by 2020, or in other words, the CO₂ emissions will be reduced by 11 million tons per year. Serbia is mainly following the steps and adopting the laws from the EU, and as a matter of course Wilo Belgrade recommends to technical staff and installers to start offering and installing high-efficient pumps as soon as possible. That way, energy efficiency can start contributing as early as today to business success and significant savings. Investors can make an additional profit having implemented energy efficiency measures. If the stipulations of the ErP Directive are obeyed, considerable additional savings could be made in electric energy consumption. So, the costs of the life cycle can also be reduced. For that reason, investors should be informed today already about this change and advised in terms of energy efficiency.

EP *The option to verify the life cycle costs using the LCC-Check allows you to calculate the cost-effectiveness of an existing heating pump and to recommend the best pump for a replacement. Does this service provide an accurate estimation of savings that customer will make by replacing the pump?*

Aleksandar Momcilovic LCC-Check helps you in the best possible way to do the preventive replacement of the pump. It calculates the cost-effectiveness of an existing (unchecked and inefficient) heating pump in your system and recommends an optimum high-efficient or frequency-regulated replacement pump. Therefore, relying on LCC-Check, we demonstrate and prove that preventative pump replacement is often very justified and needed, but also a simple decision.

Wilo LCC-Check is one of the tools of our pump selection software - Wilo Select 4. Based on data on potential savings and depreciation time, the client gets a solid founda-

tion to be able to decide in favour of preventive replacement of the heating pump.

The process of analysis is done in three simple steps:

1. Choose the type of your pump (which is in use in your system) from our database. If there your pump isn't in the base, enter the data from the pump's plate.
2. The system will immediately suggest operating points for the existing (old) pump you have selected. They can be used directly to calculate the flow and strain, which will further help us choose new, high-efficient pump for replacement.
3. In the last step, the Wilo High-Efficiency Pump is chosen according to the specified data, and the life cycle costs are calculated for both pumps. The cost savings and depreciation time are clearly shown in two diagrams.

wilo TOOLS FOR ANALYSIS, DESIGN AND SELECTION ALSO AVAILABLE TO CUSTOMERS

Having Wilo as a partner, you can be sure not only to make a smart choice of products but also to benefit from the extensive package of services we provide. We offer reliable support throughout all phases of the project – from planning, to dimensioning, to putting into operation and maintenance. We do not want you to choose any solution, but precisely what you need and what is right for you – whether it's a new installation or replacement of an old pump. We consider your requests and analyse them based on your individual and economic solutions, desires and conditions.

Besides Wilo-LCC analysis, consulting and Wilo-Energy Solutions – proactive pump replacement, we also offer tools that will make your work much easier:

• **Wilo-Select 4 – pump selection consultant**

Wilo-Select is our software for designing and selection of pumps and pumping systems. With its help, selecting the appropriate pump is possible in just a few steps, and at the same time, you have all the most important information about the product – product description, installation and usage instructions... This is an optimal tool for designers, experts for heating and air conditioning, water supply, installers, and is very flexible and easy to use. Wilo-Select provides the best option for replacement, with a detailed technical data sheet and information on potential savings and depreciation period. The product comparison option gives a solid basis for negotiation, as well as a great advantage when making the final decision of the pump. A simple interface helps you choose the accessorised equipment for pumps and pumping systems for water supply or wastewater; therefore quotations are faster to make and project management easier to run.

There are two options for our clients to work in the easier and faster manner: Wilo Select 4 Online – online access to pump selection software, and Wilo Select 4 Desktop – downloadable version, for access at any time regardless of whether you are in the office, at home or in the field.

- **CAD catalogue** – with 2D or 3D models of our products: drawings of Wilo pumps in DWG 2D or 3D and STEP format

- **Wilo Revit Plugin for BIM** – Wilo Plugin for Autodesk Revit 2014 (or later versions) is part of the comprehensive support we provide to our business partners: designers, contractors, installers, distributors, OEM partners ... With Wilo Revit Plugin, you directly import our Revit Base with ETIM product information into BIM projects.

Building Information Modeling (BIM) is a design process in the construction industry that enables the management and creation of digital/virtual physical and functional characteristics of the building. In the long run, BIM should be considered as a tool that will change the culture of the design itself. It is available for projects of any size. BIM is a solution that during the entire construction process allow management of all necessary information, transforming them into a 3D model. This is the future of design, and it is important to emphasise that in this case also we are ready to support designers along the process.

- **Wilo application** – “Wilo Assistant” – a free app for Apple or Android devices provides information on high-efficient Wilo pumping technology, a large number of tips & tricks manuals related to pumping techniques.

Therefore, LCC-Check precisely determines the amount of savings the client makes by replacing the pump, as well as the depreciation period.

EP *The equipment and repair service is a part of Wilo Beograd ltd with full-time service and engineering personnel, who are thoroughly trained for all repair jobs on Wilo pumps and systems. There is a network of service partners, too. What would be the highest quality of your service?*

Aleksandar Momcilovic The most valuable fact for buyers, is that our company provides WILO SERVICE, which is organised according to the highest company service standards. Wilo Belgrade Service has reached the professional level of services, according to very demanding standards set by Wilo SE Germany, whereas even much more developed countries have not yet attained this level of service staff training and available equipment. The service has full-time service and engineering personnel who are completely trained for all repair jobs on Wilo Pumps and Systems, and other too. The staff has the appropriate equipment for protection and all other needs, as well as the necessary hardware and software tools, direct or remote/contactless control and monitoring of pumps and pumping systems, errors detection, etc. They are fitted out to manage all types of defects, servicing and repairs of Wilo pumps and equipment. Having our vehicle fleet, standard and specialized tools and all accompanying equipment allows us to maintain, provide service and support to WILO customers in a proper and up-to-date manner. For the whole territory of Serbia and Montenegro, we have provided a network of service partners so that users of Wilo equipment can have better technical support and assistance. Our authorised service partners have their vehicle fleet and all accompanying equipment and necessary machinery. Currently, there are 10 of them, with an increasing tendency. Numerous renowned service companies offer us cooperation for pumping equipment throughout the country. It is important to emphasise that all our service partners must attend training and get certification according to the highest standard level.

Our goal is to meet the maintenance requirements of our business partners, and therefore we offer several standard packages for maintenance of Wilo pumps and accessories: Basic, Standard and Comfort. Each of these packages includes certain activities and benefits that the client gets by signing a maintenance contract. Constant efforts to make the plant operations safe and genuine care for the needs of our business partners have resulted in becoming one of the leaders in the market.

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EP *Due to the enormous problem with polluted waters in our country, and at the same time, the obligations imposed by the EU regarding the opening of chapter 27, we are increasingly concerned about water conservation and wastewater treatment. Precisely how to deal with this treatment problem is in the focus of our government institutions. What is the technology that Wilo offers in this sector?*

Aleksandar Momcilovic The demand for pumps and pumping systems, especially for wastewater treatment, has been multiplied in recent years due to urbanisation and water shortages in the world. The drainage conditions are changed, the amount of solid materials in the wastewater is increased staying for more extended period in the water. Therefore, the lifecycle costs of the pump, including procurement, maintenance, malfunctions and repairs, are very important for clients. The years of experience in business projects for wastewater technology enable us to provide a safe process flow and reliable solutions. Regardless of whether it's about pumps, pipes, ventilation, filters or disinfection of (dirty) water, our extensive products range and system solutions always provide a safe and energy efficient solution for you. Depending on the demand, the flow rate and strain, Wilo

pumps can be used for the most diverse purposes in treatment of wastewater, sludge and slurry waters, abrasive and fibrous solutions. All buildings and facilities in the world produce wastewater that must be treated to meet hygiene standards and avoid unpleasant odours. The future technologies and concepts of wastewater disposal must meet the following conditions: maximum reduction of the input of harmful substances into wastewater, reduction of wastewater dilution (infiltrated water), interruption of wastewater flows (rainwater, dirty and wastewater), reduction of residual waste from wastewater

and the use of wastewater flows (muddy water, urine, etc.)

The future concepts of wastewater disposal therefore require for the designer and the user to have a deep insight to improve the price and use ratio in the interests of people and the environment. Our solutions are primarily used in the following areas: wastewater pumps and systems, drainage and flood protection, collecting and transporting wastewater and wastewater treatment.

Wilo products and systems set standards for performance and efficiency. Besides, we provide support from planning to putting into operation to the maintenance of your system. Wilo has it all: the water discharge from household, from commercial and industrial buildings through pumping stations, separate and collective pumps, to the drainage of water under pressure.

Interview by: Tamara Zjadic





www.energetskiportal.rs

Get Charged in Slavija Square!

On the 1st of March 2018, the doors of the Hilton Belgrade hotel were officially opened to the guests of the Serbian capital. Within the Slavija hotel, there is a modern public garage adapted to the European standards. Four underground floors include 282 parking spaces and two chargers for electric cars which have a capacity for four vehicles.

The work of installing the charger has been entrusted to the Belgrade-based company "MT-KOMEX". In the past, it has already proved to be an excellent partner for companies determined to include the sustainable development component in their business through the support of "electricity transport". Since 1919, when it was founded in Dallas, the Hilton hotel chain has been the backdrop for

All photographs: MT-KOMEX



many meetings and business arrangements, but also for the emergence of a popular cocktail of Piña colada (San Juan, 1954). Hilton has spread its hotel network through more than 85 countries on six continents; therefore only foxes, penguins and whales from the Antarctic have been left out from the luxury of their rooms and apartments. The engineers of MT-KOMEX are respected by Serbian public institutions and successful private companies, as well as reputable world corporations. ABB, BMW, **CEEFOR**, IKEA, Fronius, ProCredit Bank, Propulsion, Triple Jump... those are only some of their associates and clients, and the list goes on. In the past seven years, MT-KOMEX gradually replenished and changed its core business, so its employees had the opportunity to enrich their decades of extensive experience in the field of mechanical engineering and welding with new knowledge and skills, participating in numerous projects for the construction of small hydro, gas and solar power plants.

Taking a step forward with modern trends, company leaders also ventured to support the introduction of elec-

tric vehicles on Serbia's roads and the development of the chargers at times when moving through Serbian streets in an electric-powered car sounded like science fiction. Thanks to the engineers of MT-KOMEX, electromobility is now closer to our citizens. How close is it? Well, just two minutes' drive away from the fountain in the Slavija Square in the garage of Hilton Hotel Belgrade. The engineers of "MT-KOMEX" are trained to install chargers, both in smaller residential and business units, as well as in larger buildings with more demanding infrastructure, public parking lots, pumps, corridors of main roads and highways. You can find out more about the products at www.elektropunjaci.com.

Jelena Kozbasic

Find more information at:



www.elektropunjaci.com



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Making Surroundings Cleaner and more Pleasant for all the Citizens of Vrsac



Dragan Ninkovic, a traffic engineer

Dragan Ninkovic, a traffic engineer, had worked at “Autocentar Petrovic” before he got a position of a director of “Parking - Sabac”, the Public Utility Company. He was a member of the Managing Board of the Serbian Parking Association, a team member for “Development, finance, construction, maintenance and management of the public parking garage in Sabac” through a model of public-private partnership, and also a member of granting concession team for public transportation on territory of the city of Sabac.

Having hold the position of the manager at “Stari grad”, the Public utility company in Sabac, from 2012 to 2016, he made a tremendous effort to deliver better business results, and this attempt brought a business success in 2015, which stands for the best result in the last 30 years ever since the company was founded.

Currently, he is a member of the Managing Board of the Serbian Public Utility Companies Business Association – KOMDEL, also an assistant to the director for public utilities at Public Utility Company “Drugi oktobar” and the director of “Angrokom” company from Vrsac.

We talked with Dragan Ninkovic about the removal of dumpsites which are dispersed across the territory of Vrsac municipality, about repairing the rainstorm damage in the City park, increasing the level of recycling and waste sorting as well as about organising the “Recycling day” and activities which are designed to educate the youngest.

EP *By doing your regular work and running special campaigns, the public utility company removes dumpsites which are located on the territory of the Vrsac municipality. Could you tell us what you have accomplished this year?*

Dragan Ninkovic Our regular work consists of many things such are pocket parks’ design, mounting flower baskets on street light pole, maintenance of the access to the city, removal of wild dumps, planting flowers in circular flower beds, landscaping of green spaces and waste transportation from public institutions, complete washing and sweeping of streets, promenades and sidewalks, road verges, canals, transportation of bulky waste, reconstruction of green areas on the Square of St. Sava. Our employees are engaged for cleaning, waste collection, mowing, clearing weeds and redundant vegetation.

The campaign such as “April – the month of cleanness” serves well to intensify the works on the restoration of children’s playgrounds and street furniture at public spaces, as well as on removal of dumpsites. This year, just before the Easter holidays, we have cleaned the garbage container areas using the heavy machines. We set about mounting the street furniture at Balkanska street, the one that has been said it never looked better. Also, we have cleaned the huge dumpsite at Pavlis, along with garbage dumps scattered on the way from Veliko Srediste to the city, and even at Mali Rit and Streliste Kamenolom locations. We talk about the



The City Park in Vrsac,
one of the oldest parks in Serbia,
has become the symbol of the town

protected natural areas, and it is the duty of each one of us to prevent further emersions of dumps which destroy flora and fauna which the Vrsac mountains are famous for.

In a joint operation with the Vrsac City administration, on the eve of May Day celebration, we also organised the cleaning up of Vrsac hill from Helvecija to Mountain Lodge. The road verges have been cleaned as well as the paths through woods and the park furnishings have been placed. I would like to point out our great cooperation with many city institutions particularly. Starting from this year, we have been carrying out all the campaigns side by side and with an obligatory citizens' contribution. The citizens suggest what should be done, but they also have an active role in performing chosen activities.

EP *Vrsac has suffered major storm this year that wreaked havoc damaging many trees and allees in the City park. What have you done about the aftermath of this storm?*

Dragan Ninkovic In the middle of May, storm and violent winds broke and tore down several trees doing severe damage to allee in the City Park. While we were removing the broken trees and branches from the City Park, we found many fallen nests along with more than a hundred birds that had had their homes in crowns of the trees at the City Park. Our ranger Milivoj Vucanovic landed us a hand and, alongside with the workers of our public utility company,

he took care of all the wounded birds so that they could get care, food and once recovered, fly their way back into nature. The City park in Vrsac, one of the oldest parks in Serbia, has become the symbol of the town, and the citizens of Vrsac are proud of it. Our public utility company makes an all-out effort, according to the protection plan, to keep almost the 6 hectares of open space immaculate and neat. Our employees try very hard to maintain lawns, topiary bushes, shrubs and a variety of flowers lavished with beauty so that the whole park resembles a proper botanic garden, being the pride of its citizens and also numerous comers to town.

EP *What are the measures you are taking to improve the level of waste recycling and selection?*

Dragan Ninkovic The public company "Drugi oktobar" and the "Angrokom" company have established up to this moment 12 recycling drop-off sites in Vrsac and placed more than 50 new garbage containers for all sorts of packaging waste. On the occasion of the World Environment Day, all institutions in Vrsac got containers for PET packaging, so that the quantity of collected primary waste selection could go up. The containers were distributed to elementary and secondary schools, boarding school, City hall, public utility companies, Enology laboratory, Stop Shop, Sports federation, children playrooms and other facilities. We have decided to collect waste in two separations, wet



and dry, at every recycling drop-off site. As for dry separation, we placed yellow containers for plastic, aluminium and glass packaging. Under dry separation, there are blue containers for cardboard and paper packaging. Also, there are standard containers for mixed communal waste at drop-off sites.

EP *Recently you have organised "The Recycling Day". Are you satisfied with its effect and the response you got from citizens and companies?*

Dragan Ninkovic On the occasion of the World Environment Day, the public company "Drugi oktobar" and the "Angrokom" company organised "The Recycling Day". At the Saint Sava square, there was an "origami" container for glass, and red boxes for collecting glass were placed at the Youth square, Andrija Lukic square, Hemograd and Military square. Citizens who brought three kilograms of glass packaging or more got a prize of a symbolic value which can be used indefinitely and serve as a reminder to them to take care of our planet. At the event we have collected more than two tons of glass which will be processed and recycled by the "Sekopak" company. Glass and aluminium are the only recyclable materials that can be recycled a million times, and from the aspect of the circular economy, they are significant. Previously, we distributed special boxes to all catering establishment in Vrsac for glass packaging disposal, because we want to improve the primary waste collection of this recyclable material.

EP *The part of your activities is designed for the education of the youngest citizen of Vrsac. How exactly did you organize it?*

Dragan Ninkovic Together with "Lesovik", the Association of the guards of the natural and cultural heritage, we carried out a workshop "Awakening" devised for children.

Some 84 scholars of the first and second grade of the elementary school "Olga Petrov Radisic" took part at the



"Starting from this year, we have been carrying out all the campaigns side by side and with a sure citizens' contribution"



Glass and aluminium are the only recyclable materials that **can be recycled a million times**, and from the aspect of the circular economy, they are significant



workshop which is dedicated to the awakening of spring and new life cycle. The children planted and sowed 15 varieties of plants. Each class made a vertical plantation of strawberries in combination with beans, little plot with grains and a pot with seeds and stones of perennial fruits and trees. Another part of the workshop was dedicated to learning about the relationship between a man and a dog. The utility company, in cooperation with the Vrsac City administration and the Public utility company “Gradska cistoca” from Belgrade, organised in Vrsac a quiz in ecology “Dirty or clean – not the same thing”, for the pupils from the fifth to the eighth grade. The winner of the quiz in ecology in the city finals was a school “Paja Jovanovic”, and our utility company provided the prizes for the best competitors.

EP *What are the plans for the next year?*

Dragan Ninkovic Besides the regular work that we carry out with a commitment on a daily basis so that our city stays nice and clean to the satisfaction of its citizens, our goal is to establish the secondary waste separation line. We have to work on increasing the level of waste recycling, to reduce the quantity being disposed at the dump site. We are going to work on broader education of citizens of Vrsac about primary waste separation. Furthermore, we will insist on primary waste selection on the territory of Vrsac city. Also, the number the recycling drop-off sites will be increased, and more boxes will be provided for the primary waste selection.

Interview by: Milisav Pajević

WARMING OCEANS ARE CHANGING THE WORLD'S RAINFALL

Global warming means truly global warming. The atmosphere, the oceans, and the ground are all warming. As a result, ice is melting, seas are rising, storms are getting more severe, and droughts are getting worse. But these things are not happening in isolation. The tricky thing about the climate is that things are connected all across the globe. And those connections are revealing changes that may not be obvious at first glance.

One such change was exposed in a recent paper published in the journal *Environmental Research Letters* by a team of top scientists from China and Brazil. The scientists focused their study on the Amazon rainforest. There, the year is broken into “wet” and “dry” seasons. The researchers wanted to know how rainfall has changed during the wet seasons over the past few decades.

What they found was astonishing – the rain in this tropical rainforest has increased 180–600 mm (7–24 inches). They learned about the increase in wet-season rainfall by reviewing old weather data – information from rain gauges for example. They also used satellite measurements to complement the rain gauge readings. The trend they found was clear – the rains are increasing.

So, any good scientist wants to know why. Why are the rains increasing? What is the main cause? By using the results of state-of-the-art climate calculations, the authors showed that the temperatures in the Atlantic Ocean are primarily responsible. The Pacific Ocean water temperature plays a smaller role.

This study is really important for a few reasons. First, it is important for the entire globe's climate. The rainforest provides about 20% of the Earth's freshwater. There is a tremendous amount of evaporation from the rainforest into the air. This evaporated water is carried to other parts of the planet where it falls as rain. We call the evaporation/precipitation process a “hydrologic cycle.” This cycle refers to the movement of water throughout the planet; the Amazon is an important engine for the cycle.

But the importance of the Amazon is broader than just water. The growth and decay of wood and plant growth there the Amazon absorbs and emits large amounts of carbon dioxide. Think of the rainforest like the lungs of the planet.

They help the planet breathe.

The Amazon rainforest also helps transfer heat throughout the Earth's climate. Energy moves from one location to another with help of processes (such as evaporation and condensation) that originate in



the Amazon. In these ways, the Amazon connects far-flung parts of the planet together. What happens in one region like the Pacific Ocean affects the climate elsewhere like the Atlantic Ocean. The way the climate interacts between to distant locations is called “teleconnections.” And the Amazon is a great for the planet.

The authors used six different methods to look at the data. Three methods were based on actual rainfall measurements. Three additional methods were based on a technique called climate reanalysis – essentially combining measurements and climate calculations.

The general results are the same, regardless of which of the six methods are used. It doesn't matter whose inputs are used; the rainfall there is increasing. Only one of the methods (MERRA2) results in some portions of the region with a reversed trend.

Next, the authors found that the culprit is the Atlantic Ocean. There has been a very strong warming in the Atlantic, especially off the coast of South America. The warming oceans supercharge the evaporation of ocean water into the atmosphere and change both the amount of water and the amount of energy in the atmosphere. This warming in the Atlantic is responsible for about half of the wet-season precipitation changes in the Amazonian rainforest.

Source: [Guardian](#)

FRANCE MOVES TO RESHAPE INFRASTRUCTURE AND PROMOTE BICYCLE TRANSPORTATION

France plans to launch a major endeavor to triple the amount of cyclists on its streets within the next seven years. The action will include building better bike lanes, providing financial incentives for commuters to switch to bicycle transportation and cracking down on bike theft. The plan was announced by the French Prime Minister Edouard Philippe at a speech in Nantes, where he revealed that cycling accounts for only 3 per cent of transportation in the country.

Despite hosting the acclaimed Tour de France competition, France has fallen far behind other EU nations in bicycle transportation. In the Netherlands, cycling accounts for almost a third of all transportation, backed by a strong cycling culture as well as organized routes and laws that make Dutch riders feel safe on the roads. "Fifty million euros per year will not turn France into the Netherlands, but it is a start," said Olivier Schneider, head of the French Bike Users Federation (FUB).

France's total fund for cycling infrastructure over the next seven years amounts to 350 million euros (\$410 million). "We plan to triple the share of cycling to 9 per cent by when we host the Olympics," Philippe said. "The discontinuity on the bike lane maps creates insecurity and discourages people from cycling."

Currently, bike lanes in French cities only run short distances and are not safely connected to one another at major intersections or heavy traffic zones.

In addition to addressing these incomplete routes, the government will restructure one-way streets to include two-way bike routes, saving commuters inconvenience and time. Converters to cycling will be rewarded yearly with 200 euro (\$233) tax-free stipends from the French government, and many private companies are looking to double that amount, providing their own 400 (\$467) euro tax-free rewards each year for commuters. Companies are also being mandated by the government to allocate proper bicycle parking facilities for their employees, a feature that train hubs around the country will also boast. To deter bike thieves from suspending the country's progress, new bikes will be subject to a mandatory identification engraving system, which will make it easier for burglars to be apprehended and fined.

The French government will also introduce cycling lessons in all secondary schools by 2022 to ensure that future generations embrace the cycling culture and respect for a clean environment.

Source: [Inhabitat](#)



GREENPEACE REPORT EUROPE HAS 10 YEARS LEFT TO DITCH FOSSIL FUEL CARS

Europe must phase out the sales of new gasoline and diesel-fueled cars by 2028 if it wants to live up to its Paris climate agreement emissions-reduction pledges, according to new research by Germany's Aerospace Center.

Even conventional hybrid cars, which feature gasoline-powered engines, would have to disappear by the mid-2030s if Europe intends to fulfill its part of the Paris deal to limit global warming to 1.5°C, according to the Greenpeace-commissioned study.

The researchers only analyzed the share of auto emissions in Europe. More research is needed for regions such as Asia or the Americas, as it is "entirely possible that some countries would need to phase out fossil fuel cars even quicker," Richard Casson, of Greenpeace's air pollution campaign, noted in a blog post about the new study.

For the study, the German researchers compared the European Union's current passenger car carbon emissions with the so-called "carbon budget" available to keep global warming under 1.5°C, with a likelihood of 50 per cent and 66 per cent respectively.

They found that if the current annual CO₂ emissions from Europe's passenger cars continue unchecked, the carbon budget would be completely depleted within 10 years under the 50 per cent scenario, and within 5 years in the 66 per cent scenario.

The researchers warned that "quick and stringent" CO₂ emission reductions are necessary from passenger cars.

"Auto CO₂ emissions need to peak as soon as possible," German Aerospace Center Director Horst Friedrich told the Guardian. "Looking at the dwindling carbon budget it is crucial to push low-emitting cars into the market, the earlier the better, to renew the fleet."

"The phasing-out of the internal combustion engine in passenger cars will not only benefit the climate it will also help solve the air pollution crisis and improve quality of life for everyone," said Barbara Stoll, Greenpeace Clean Air campaigner, in a press release.

Greenpeace, however, is not asking every driver to make the switch to electric vehicles.

"Cutting pollution from transport doesn't only have to be a choice between fossil fuel power cars and electric ones," Casson wrote. "A truly sustainable plan for transport should be about constructing more bike lanes, building cycling infrastructure that would make it easier for people to get around without cars. It should be about making public transport more affordable, leading to more people using trains or buses to get around. And it should be about investing in car sharing schemes, and reducing the emissions of vehicles on the road."



Source: [Eco Watch](#)

TAXING RED MEAT WOULD SAVE MANY LIVES, RESEARCH SHOWS

The cost of bacon and sausages would double if the harm they cause to people's health was taken into account.

Taxing red meat would save many lives and raise billions to pay for healthcare, according to new research. It found the cost of processed meat such as bacon and sausages would double if the harm they cause to people's health was taken into account.

Governments already tax harmful products to reduce their consumption, such as sugar, alcohol and tobacco. With growing evidence of the health and environmental damage resulting from red meat, some experts now believe a "sin tax" on beef, lamb and pork is inevitable in the longer term.

The World Health Organization declared processed red meat to be a carcinogen in 2015, and unprocessed red meat such as steaks and chops to be a probable carcinogen. However, people in rich nations eat more than the recommended amount of red meat, which is also linked to heart disease, strokes and diabetes.

The new research looked at the level of tax needed to reflect the healthcare costs incurred when people eat red meat. It found that a 20% tax on unprocessed red meat and a 110% tax on the more harmful processed products across rich nations, with lower taxes in less wealthy nations, would cut annual deaths by 220,000 and raise \$170bn (£130bn).

The resulting higher prices would also cut meat consumption by two portions a week – currently people in rich nations each eat one portion a day. This would lead to a \$41bn saving in annual healthcare costs, the research shows.

"The results are dramatic for processed meat," said Marco Springmann, at the University of Oxford and who led the new study. "Bacon is really one of the unhealthiest food products that is out there."

"Nobody wants governments to tell people what they can and can't eat," Springmann said. But the healthcare costs incurred by eating red meat are often paid by all taxpayers, he said: "It is totally fine if you want to have [red meat], but this personal consumption decision really puts a strain on public funds. It is not about taking something away from people, it is about being fair."

Source: [The Guardian](#)



CHERNOBYL GOES SOLAR

Chernobyl in Ukraine is infamous for having been the site of a nuclear disaster in what was then the Soviet Union. For the past 30-odd years, since the catastrophic meltdown at the local plant in 1986, the area has been deemed unfit for human habitation. That has led to a resurgence of nature and wildlife in the contaminated area with wolves and bears having reclaimed local forest undisturbed.



But Chernobyl is now home to something else other than wild animals: a new solar farm.

Oppose the decommissioned nuclear plant, which is encased in a giant sarcophagus to prevent radiation, sprawl the solar panels of a new solar farm. The photovoltaic project dubbed Solar Chernobyl started operating on October 5, only about 100 meters from the old nuclear reactor.

Evhen Variagin, chief executive of the company Solar Chernobyl LLC, which is behind the project, stressed the symbolism of the selected location for the new solar farm. "It's not just another solar power plant," insisted. "It's really hard to underestimate the symbolism of this particular project."

The farm, which cost €1 million and is a joint venture by the Ukrainian company Rodina and Germany's Enerparc AG, ensures that the infamous site produces electricity again. The solar farm is expected to meet the energy needs of about 2,000 households. Plans are underway to boost the site's capacity to 100 MW in.

Ukraine is investing heavily in renewables, adding more than 500 of capacity between January and September this year, which is more than twice the capacity added all of last year.

Valery Seyda, head of the Chernobyl nuclear plant, has welcomed the new solar farm at the site. "Now we are seeing a new sprout, still small, weak, [but one] producing power on this site and this is very joyful," he enthused.

Source: [Sustainability Times](#)

MOSQUITOES COULD SPREAD MICROPLASTICS, STUDY SUGGESTS

Microplastics, which get gobbled up by whales, deep-sea fish and plankton, have also turned up in the bodies of mosquitoes, scientists have revealed.

The research, published in the journal *Biology Letters*, is the first to show that bits of plastic can be transferred between a mosquito's life stages that use different habitats.

For the study, the scientists fed the larvae of *Culex pipiens*—the common house mosquito—different-sized fluorescent polystyrene beads. The researchers found that the tiny fragments stayed in the larvae's bodies as they matured into flying adults.

Beads that were smaller than 2 micrometers in size transferred "readily" into pupae and adult stages, while larger beads that were 15 micrometers in size transferred at a "significantly reduced" rate, the paper states.

"Larvae are filter feeders that waft little combs towards their mouths, so they can't actually distinguish between a bit of plastic and a bit of food," lead researcher Amanda Callaghan of the University of Reading told *The Guardian*. "They eat algae, which are more or less the same size as these microplastics."

The study suggests that plastics could enter the larger food chain if birds, bats or other creatures eat the mosquitoes.

"The implication is that you can have plastics at the bottom of the pond that are now going up into the air and being eaten by spiders and bats and animals that normally wouldn't have access to that plastic," Callaghan told *The Independent*.

"You could have a dragonfly, for example, eating mosquitoes as they are emerging—so it could be eating lots of mosquitoes with plastic in them, and then a bird could be eating that and getting an even bigger dose."

The researchers are now studying if consuming plastics harms the mosquitoes, *The Guardian* reported.

"It is a shocking reality that plastic is contaminating almost every corner of the



environment and its ecosystems," Callaghan added. "Much recent attention has been given to the plastics polluting our oceans, but this research reveals it is also in our skies."

Source: [Eco Watch](#)



PELLET BREAKS NEW PATHS

Biomass makes up 61 per cent of the total potential of renewable resources in Serbia, which is unfortunately wasted on extremely inefficient energy generation

The limitation and harmfulness of fossil fuels in energy production lead humanity towards finding and exploiting alternatives to these dirty energy sources at higher level. Windmills are springing up across our planet, solar energy is generated through solar panels, and hydropower plants are built on river flows. However, the most popular energy source remains underused. We are talking about biomass.

Biomass includes biodegradable parts of by-products of wood industry, scraps and residues of biological origin from agriculture, and it also includes plants and animal substances as well as industrial and municipal waste. Biomass combustion produces heat energy, and in recent decades it has been used for the production of electricity. For energy purposes, it can also be used as biogas obtained by decomposing different biological waste into a gaseous state, and as a biofuel obtained by converting biomass into a liquid state.

Biomass makes up to 61 per cent of the total potential of renewable resources in Serbia, which is unfortunately wast-



ed on extremely inefficient energy generation. In cooperation with the Centre for Energy Efficiency and Sustainable Development (**CEEFOR**) from Belgrade, the municipal assembly of Lapovo has decided to put an end to the senseless use of biomass and to replace the inefficient heating system based on heaters, radiators and air conditioners with boiler room on the pellet. The core business of **CEEFOR** except two obvious – energy efficiency and sustainable development – is precisely renewable energy sources.

Heating on wood pellet has become popular in the last few years, primarily because of its environmental and financial advantages. The use of biomass is continuously increasing in households and also in business and public facilities. Pellet is a high-efficient energy fuel that is obtained by particular technological process of grinding, drying and pressing of various biomaterials.

CEEFOR team consists of 20 experts with many years of working experience: from mechanical, electrical and civil engineers, through technology, architect, traffic and fire protection engineers, to economic and financial experts, and translators.

Only one ton of pellets provides the same amount of heating as:

- 500 l fuel oil,
- 450 kg of propane-butane,
- 600 cubic meters of natural gas,
- 4,800 kilowatt hours of electricity.

National Renewable Action Plan of the Republic of Serbia until 2020 envisages construction of biomass plants up to 100 MW and construction of biogas plants up to 30 MW. The total installed capacity of biomass power plants is currently 2.4 MW and of biogas is 25.2 MW.

The amount of this precious energy resource in Serbia is estimated to 3,405 tons of oil equivalent. It is still available to a large extent to investors who plan to invest in the construction of power plants.

If you are thinking about investing in a biomass or biogas power plant, your first step is to choose a site for building a plant, taking into account the availability and quantity of raw material potentials. The **CEEFOR** engineers can also be your helmsman on your way to producing first green kilowatts from the power plant, in the same way, they guided the authorities of Lapovo municipality on the road to energy-efficient heating of municipality's premises.

Prepared by: Jelena Kozbasic



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PRODUCTION IS LOVE IN THE LONG RUN

Imagine the hills of waste tires. You don't even have to imagine them – you must have seen them by now, not only in the news about the amount of waste in our country and incredible possibilities for their recycling. Although this topic has been in the limelight, few companies manage waste tires. However, there is a company in Serbia that manages to make end product from the waste tires that the company collects and processes.



Natasa Bozicevic Stankovski, the responsible person for waste management in "Eko-sistem"

Novi Sad-based company "Eko-sistem" creates new products from waste tires: mats for playgrounds, speed bumps, wheels for bins and containers. The possibilities are not exhausted. The recycled tire can change its shape and obtain new "life chance" through numerous other products. By applying new technologies, "Eko-sistem" closes the circle; thus, waste can be reused, while resources are being saved, and the environment is being protected from pollution.

This young company, which was registered in 2015 as a branch of a renowned company "Plava Frajla", has made a breakthrough with its products on the European market in a short time. They are proud to say that they cover more than half of the market of the former Yugoslavia. Natasa Bozicevic Stankovski, the responsible person for waste management in "Eko-sistem", says that the success is even greater when taken into consideration that they have been

REIMBURSEMENT FOR RECYCLERS

If there are twenty companies in Serbia that have received integral or local recycling licenses and who qualified through the records to receive a recycling fee, Natasa says that the whole process would be facilitated for domestic recyclers if these funds were paid quarterly. "If the fee were paid quarterly, we could invest more, increase the production and employment in this industry. One should not forget that recyclers employ people from the most vulnerable social groups."

In anticipation of compensation, companies raise loans and mortgage on privately owned properties, so as not to break the production process and comply with the commitments undertaken towards suppliers. "We do not have a problem other than this. Cooperation with state authorities is excellent."

The state shows consideration, representatives of the state administration want to cooperate, and the competent inspectors are not repressive, but they are trying to play this important advisory role in this area where we mostly educated ourselves," Natasa explains.

operating only for three years, and regular orders from the European countries confirm that the quality of domestic products of waste tires does not lag behind the well-known European producers in this field.

"Our work is all about great passion. We are in love with the process of making a product. We are constantly trying to find a way to be faster and better. We also research which machines we should purchase to improve our pro-

"We produce **elastic rubber flooring tiles of recycled tires** that are the ideal base for children's playgrounds and sport courts because they **are soft and durable**"



All photographs: Eko-sistem

GRANULATE AS AN ENERGY SOURCE

TDF is an international label for the product type which makes the part of the assortment of this company based in Novi Sad. Natasa explained to us the type of product, "It's a 3 x 3 granulate that is separated from the wire and sold to the cement plants as fuel. This is an important business everywhere in the world. In no country, are cement plants allowed to import tires to obtain energy by burning them, yet they must take, from the recyclers, the tires which were processed and from the wire which was drawn. The wire is further sent to melting-house, and canvas and tires can be burnt." Natasa pointed out that TDF granulate is obtained from the dumper and tractor tires, and it must be known to whom this granulate is delivered and for which purpose.

duction. We work in three shifts without shutting down the machines, 24/7 throughout the year."

Giving the fact that this production process is preceded by recycling, the company is registered as an operator of specific waste – a recycler, which means that it has all the necessary permits following the legal regulations in Serbia, they purchase tires from legal and natural persons.

Hard working team "Eko-sistem" is doing a great job, although caught up in extensive bureaucracy that is necessary in order to know the origin and purpose of each kilogram of the recycled tire. They point out that their work is completely transparent and thanks to their effort the amount of worn out tires that end up in the Danube or in the field is reduced.

Moreover, rubber pads that cover playgrounds, outdoor gyms and running tracks are made from obtained granulate when they recycle the tires and the satisfaction with the performed work is immeasurable.

"We are quite self-taught. There were no examples to learn from. In this country, we still know little about the field in which we operate. Our Production Manager Darko Radic spends days in testing new machine to find out how to use it and to get the best possible product," Natasa reveals. According to her, "Eko-sistem" has purchased a



The "Eko-sistem" products represent **one of the best examples of the circular economy applied in Serbia**





SAFE FLOORS FOR PLAYGROUNDS, PATHS AND SPORTS COURTS

Eko-sistem produces elasticplates from recycled tire that provide safety to children, walkers and athletes on the courts and give significantly better appearance to the entire space. They can be used for a variety of purposes, both for sports courts and paths and also for the garden interior.



huge number of waste tires. Recyclers in Serbia would purchase significantly larger quantities of waste tires, if the state pay incentive funds on a quarterly basis.

“To make the situation even more uncertain, the state has announced a call for funds in June and we have been working for 6 months without knowing what to expect. We invested funds not knowing whether a call would be announced at all,” says Natasa, adding that they have a direct impact on the improvement of the environment in our country.

“We are the recyclers, we take care of waste and process it mechanically, and then we refine it and make an end product. There are numerous purposes of granulates from road infrastructure to children’s playground and sport fields. All this contributes to making Serbia cleaner and more beautiful.”

“Eko-sistem” is among few companies in Serbia that owns machines for the production of end product from recycled tires. Numerous foreign partners have visited this Novi Sad – based company and offered cooperation, pleasantly surprised by the fact that they own machines and equipment that guarantee quality. The manufacturer of the machines is the Italian company Salvadori, the world’s giant in this field. The items, which are created in their factory, are undoubtedly of high-quality and safe thus they are to be found on the numerous playgrounds, kinder-

gartens and sports courts throughout Europe. People in “Eko-Sistem” hope that the excellent price and quality of their products will be the key to their success on the public calls for equipping playgrounds, paths and terrains in Serbia. “We produce elastic rubber flooring tiles of recycled tires that are the ideal base for children’s playgrounds and sport courts because they are soft and durable. They are the best solution for lining courts since they protect users from injuries. Elastic panels also have antibacterial and fire protection properties. During the exploitation, these boards do not release harmful substances for human health and the environment”, says Natasa.

Hoping that someone will recognize the importance of products which represent one of the best examples of the circular economy applied in Serbia, Natasa announces the new investment in equipment. She points out that this investment makes sense because the recycling industry is neither present in every country, nor is a company with end

WHEELS FROM THE RECYCLED TIRE

According to Natasa Bozicevic Stankovski, “Eko-sistem” sells a million rubber rings for wheels that are found on the garbage bins and containers across the streets of European cities per year. “Our wheels are running all over Europe, from England, Spain, Portugal, Scandinavia to Eastern European countries”, stresses Natasa. The wheels are made of recycled tire granulate in black colour and tested according to EN840 standard. On the customer’s request can also be in non-standard colours. Wheels do not make noise when used, do not damage industrial floors, wooden floors, ceramic and textile substrates. They behave well on uneven surfaces, and they are resistant to sharp objects made of glass, metal and wood.



“Eko-sistem” sells a million rubber rings for wheels

that are found on the garbage bins and containers across the streets of European cities per year. “Our wheels are running all over Europe”, says Natasa

product of a recycling tire. “We will obtain better quality, we will be better on the market and we will have larger capacity with the new machine. We will soon be able to export even larger quantities of our end products. The world is always open for a good product at a competitive price”.

New machine enables, says Natasa, a new direction in the production and progress for all employees in this production company. “I am proud of the fact that more than 60 people who work in the company are connected with common effort and goal. We all feel as if this were our company. Behind each of our success, stands the entire team.”

Prepared by: Tamara Zjacic

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Slavica Orelj, an entrepreneur and innovator

NEW DELICATESSEN – Natural and Sun-Kissed

Pompon sun-dried pasta is designed as a healthy, gluten-free alternative to classic pasta. Fresh pumpkin, by specially designed process of cutting into strips and natural drying process on sun and air, is turned into gluten-free delicatessen pasta. This project, designed by Belgradian Slavica Orelj, won the award of National Forum for Green Ideas in the category for the best innovative, environmentally oriented business projects.

The project itself is based on the idea that the contemporary way of life does not necessarily have to be contradicted to nature and environmentally conscious lifestyle. Pompon pumpkin pasta is entirely natural, high-quality food, entirely produced following ecological principles of

The background of the page is a close-up photograph of numerous thin, rectangular slices of dried pumpkin. The slices are a vibrant orange color and are laid out in neat rows on a light blue plastic mesh tray. The perspective is slightly angled, showing the depth of the tray and the texture of the pumpkin slices. A semi-transparent white text box is overlaid in the center of the image.

THE SECRET OF ITS QUALITY IS IN NATURAL DRYING

Except by freezing it, pumpkin is quite difficult to maintain throughout the year. Laboratory tests carried out during the development of this project have shown that the pumpkin that is naturally dried completely retains nutritional values. Unlike natural drying, burning can occur while drying in classical dryers and the technological process itself is more complicated and expensive.

Drying as a way of preserving pumpkin throughout the year, is not an unknown process in the world. There are allegations that the pumpkin was similarly preserved in ancient Indian tribes, and a similar method of drying has been preserved in Japan to date. In neighbouring Croatia, a well-known hand cut “dried pumpkin” is traditionally made from a certain summer pumpkin sort.

The thing that makes Pompon paste authentic, in addition to a specific muscatel variety, is primarily the fact that the entire production process is carefully designed under environmental principles.

NATURE IS THE BEST TEACHER

Pompon (pumpkin, in old French) dried pumpkin paste was created within the agricultural holding Lunin sad (www.sadnica.rs) in which Slavica Orelj, the author of this project, has been engaged in the cultivation of exotic fruits and ornamental plants for many years. Slavica cultivates only those plant species that can survive in nature without the use of pesticides and other artificial supplements. She firmly believes that nature has the best answer to the most complex issues and that is the principle which governs both her work with plants and her private plans.

energy efficiency, without any industrial waste and complex technological processing.

By drying pumpkin strips in the air and sun, healthy food of entirely unchanged natural composition and extremely decorative form is obtained. Due to its exotic orange colour and neutral flavour, this kind of pumpkin paste can be easily combined with various sweet and salty foods.

On the one hand, its simple preparation (it is enough to put dried strips into boiling water for 7 minutes) is adapted to the fast meals of a modern businessman, and on the





GOOD FOR YOUR HEALTH AND SHAPE

Nutritionally speaking, pumpkin is exceptionally suitable for diets regimes. It is low in calories (100g/26 calories) no saturated fat and cholesterol, rich in minerals, fibres, antioxidants and vitamins (A, C, E, B...) and it is a perfect companion in the fight against excess pounds and cholesterol. The fact that it is naturally gluten-free makes it the ideal food for people who have celiac disease.

A relatively short period that is suitable for natural drying is left since pumpkin matures at the end of the summer, that is why a careful and efficient organisation of all production phases is required. Only solar energy is used for the entire production process. Even the small quantity of electricity needed for the operation of cutting machines is obtained from solar panels. Only organic waste – peel and pumpkin seed – remains after the production process. In fact, the real waste doesn't even exist. The pumpkin peel is further used to make compost – fertiliser for soil cultivation, while the seeds are dried, and they become an additional product.

Prepared by: Editorial staff of Energetski portal

KIDS' MEAL AS AN INSPIRATION

Slavica got the idea of a pumpkin paste quite spontaneously, inspired to prepare a healthy, tasty and attractive meal for her granddaughter. Since the bright orange paste leaves a powerful impression on everyone who could see it and try it, it turns out that this product also has a significant market potential.

other hand, its nutritious quality, the richness of taste and decorativity is recommended as exceptional delicacy worthy of top restaurants.

Exclusively muscat pumpkin that comes from the fields of local producers is used for drying. In this way, the transport of fresh pumpkin itself is reduced to the smallest possible extent. The pumpkin is cut immediately after harvesting by a special machine into long, thin strips, which are then dried naturally in the sun and air for days until they reach the required minimum of moisture. The strips are then packed in cellophane packaging. When stored in this manner they can be used within a minimum of a year from the date of packaging. When dried in this way, pumpkin completely retains its rich natural features. Since it does not naturally contain gluten, it is suitable for special diet regimes.





ONE MAN'S TRASH IS A TREASURE FOR AN EXPERT IN CIRCULAR ECONOMY

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Milan Veselinov, a circular economy expert

During the September and October of this year, the Academy of Circular Economy is being held in cooperation with the Serbian Chamber of Commerce and the company “CirEkon”, which suggests one of the changes that we should embrace in order to preserve the Earth. Plato taught his contemporaries philosophical thinking, and after a series of centuries and revolutions, mankind should adopt a new, different knowledge that will pave the way for a sustainable future in which there is no waste. “Take-Use-Make-Use ...” is *the perpetual motion* of this

Milan Veselinov is the only Serbian master of industrial ecology at the joint program of the DELFT and Leiden University in the Netherlands, the Chalmers University in Sweden and the University of Graz in Austria. He upgraded his knowledge in this area in Asia, where he spent four months exploring the benefits of the Asian, primarily China-based approach. Within the largest European innovation program, Climate-KIC, he created the CE application program in Europe. Currently, the Academy of Circular Economics is being realized in cooperation with the Serbian Chamber of Commerce.

approach that integrates the economy and waste management system.

The postulates on which the circular economy model is based, whether Serbia keeps pace with the world, how to attribute to waste the value it has in itself and how to make a production system that will allow us to develop on the only planet we have, we talked with Milan Veselinov, one of the organizers and lecturers at the Academy.

EP *How would you explain the term circular economy to a layman? What are its advantages over linear?*

Milan Veselinov Very important questions in the whole story about the circular economy (CE) are “Why” and “Do we need the CE?” It is clear that we used to fix the refrigerator, telephone and iron. Today, it does not pay off. The question is, does that make sense? Admit how many old cell phones you have in the drawer. You have in it: gold, copper and rare elements that are expensive and difficult to procure. And it will become more expensive and harder. The point of the circular economy is to start making products that will serve a person, moving from product ownership to its functionality.

This ensures that producers see benefits in the production of long lasting products, in saving needed electricity, and in a more careful selection of materials for production. Currently, our products are not designed for such an economy, we make products in which it is difficult to separate materials and they are used on the “Take-Make-Use-Throw away” principle.

The circular economy, if properly implemented, provides significant savings in the use of resources, up to 70 per cent, and energy up to 90 per cent. In addition, it keeps the environment cleaner, with no waste, since we always observe all the resources only as such.

EP *What are the postulates of industrial ecology and how can we achieve them in the context of the Serbian economy?*

Milan Veselinov Circular economy actually emerged from the idea of industrial ecology (IE). Within the industrial economy, the industry is considered as a part of the natural system, it is very easy to see the ingress of matter and energy into the industrial system, their origins, changes within the industry and exits from the industrial system. It is observed how these outflows affect both nature and the economy, and how it all affects the society as a whole.

Industrial ecology is essential to answer one question: How to make a production system that will allow us to live and develop on this planet, the only one we have? IE does not observe the planet emotionally, but rather rationally through the analysis of available resources for our devices, land for food production, energy sources for everything that a person wants to create.

Serbia is at the beginning of such a development and it is good that we know our position. There are two roads ahead of us. The first is much more expensive and it assumes

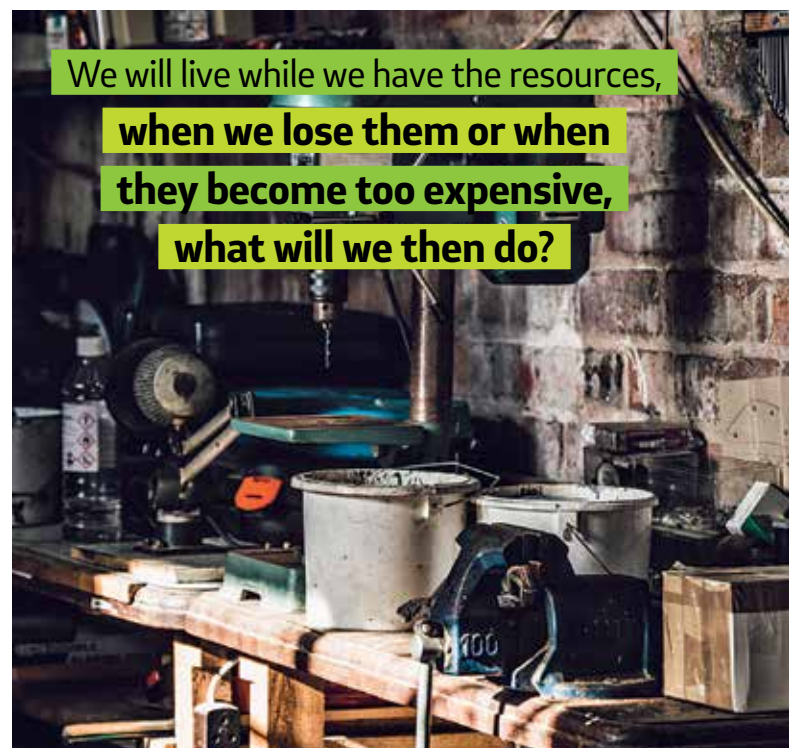
neglecting of the trend of industrial ecology and circular economy development, and the other is more inventive, pragmatic, more effective and cheaper. An important difference between these two roads is the approach to innovation, from social, organizational, market-to-technological. The first approach neglects them and deals with the traditional values of the economy, the other approach innovates and pushes us along with the world scale of possibilities. The only question is who can recognize it - from companies to local governments, consumers or civil societies.

EP *The advantages of a circular economy are obvious, but how will you approach a person who does not want to change and who is trying to feed his family without extra costs?*

Milan Veselinov In every story, there are winners and losers. Today you almost do not have traditional crafts, such as coppersmith, quilt maker, dyer... The world is progressing and is waiting for no one. The Latin proverb says, “There is no shame in not knowing; the shame lies in not finding out,” and therefore we must constantly learn. There is no rest from learning if we want to progress. There is actually only a division between those who accept and make changes and those that will be brought about by a change.

EP *Many people have applied for the Academy of Circular Economics. Do you think that means that our people turn to a more sustainable future? What is the overall situation in the field of waste management in Serbia, in your opinion?*

Milan Veselinov Our goal is to form a critical group of people from companies who see the meaning of doing business through circular postulates and which will grow in time, improve and grow to the level when they will have enough



power to change the system. CirEkon and the Chamber of Commerce of Serbia are absolutely committed to this as program implementers.

In the concept of waste management there is a so-called waste management pyramid, which states that the priorities are as follows: 1. Prevention of waste generation 2. Preparation for reuse 3. Recycling 4. Waste utilization in terms of energy recovery and 5. Landfilling. The CE is preparing a strategy for achieving priorities 1 and 2. Serbia is in the middle of editing the fifth priority and is slowly switching to recycling and incineration, energy recovery of matter. So, we lag 35 years behind Europe. In this situation, if we seriously focus on creating products that do not produce waste according to EU practice, how much do we actually need to manage waste?

However, the plan and practice are different categories and we need to provide sufficient capacity to treat waste, which will inevitably exist for another 20 to 30 years, does not cost too much and solves the problems of numerous landfills that are constantly poured into the ground and lead. More importantly, we should not tie our hands with excessive investments in the old technologies in the next 20 years, thus preventing faster development in line with the EU. The situation is such that we can not estimate exactly how much resources we can return to production through recycling, but also, even if we could, current laws do not allow this. People are working on this, and changes in laws are expected, recyclers are appearing and there are more and more of them.

66

EP You often mention the power of the circular economy and the value of the circular economy. What value is created there?

Milan Veselinov CE is a new way of creating value. Under its umbrella, we can expect that the products are made of materials that do not harm our environment and can be easily degraded in nature. The EU introduces rules that will motivate manufacturers to make such products, but also buyers to behave more responsibly towards the things they use.

The value is in: significant material savings, in energy savings, in cleaner sources of resources themselves, in the longer product lifetime, we can expect that the products will be increasingly shared, that we will have organizations that will return your worn out products to the factory instead to the landfill, a situation where you purchase resources from recycling centres instead of pulling them out of the mine, customers who create products online to their extent, we perceive that we will determine the price of a product by how much the product is harmful or contributing to your environment, how much it makes your day easier. In addition, we have more than 9 million tons of resources at the annual level, which we can, but we stop using them.

Benefits are also anticipated, re-awakening the refinery industry, repairs, spare parts, recycling, online sharing



CIRCULAR ECONOMY IN ENTREPRENEURSHIP, SCIENCE, AND PRACTICE

We asked Milan to reveal interesting patents and business models that enable reuse of the product to bring us closer to the functioning of the circular economy in practice. The Danish company Vigma has the business model is says, "What if clothes could grow with your child?". Clothes that are completely clean are used on the rental principle until your child outgrows it. Then you return the clothes, they are either converted into a new one or continue to serve another parent, and you get a new package for your kid. Such a business saves the negative impact of the product up to 80 per cent. Now imagine 20 million cars. So much textile is rejected only in America on annual basis. The Fibersoft is a technology that enables sorting material that can be reused for production. If we manage to create a circular economy in textiles, the prognosis is that the benefits of such an approach will be around \$ 160 billion by 2030 on a global scale. Otherwise, the textile industry is the second most harmful to the environment. The world loses about \$ 460 billion due to the fact that clothes are worn 5 times on average before they are thrown away, slightly less than 75 per cent never gets to recycling, but is rather deposited or burned. Another invention related to the detrimental effect of garment production has been made by DyeCoo, that is colouring clothes with carbon dioxide. No wastewater, no harmful chemicals. The textile industry is also one of the largest users of water resources. About 2,500 litres of water are needed for the production of one T-shirt. That is one whole Olympic swimming pool for only one shirt," Milan said.

of products from screwdrivers to cars, a significant shift to services besides production, etc.

EP *What is your attitude towards the project of remediation of the landfill in Vinca? What would be the ideal scenario for its use in the context of sustainable development?*

Milan Veselinov I am always talking about the subject: what changes need to be made so as not to have another Vinca? That's the power of the circular economy! The ideal solution is to start creating a system in which products will be designed to easily disassemble and easily enter "reverse cycles" and return to either use or production, in which products and services will be shared to the maximum of usability, which it will take longer to prevent the formation of waste, since waste is exclusively a byproduct of human labour. Even 94 per cent of the things we have ever used end up somewhere on the landfill.

The circular approach is not a science fiction. Today, we have products like copiers that charge a copy service, not the whole machine; illumination that does not sell glossy lights but the lighting service, laundry services are sold and not the washing machine itself, tires per kilometre, and not per piece, etc.

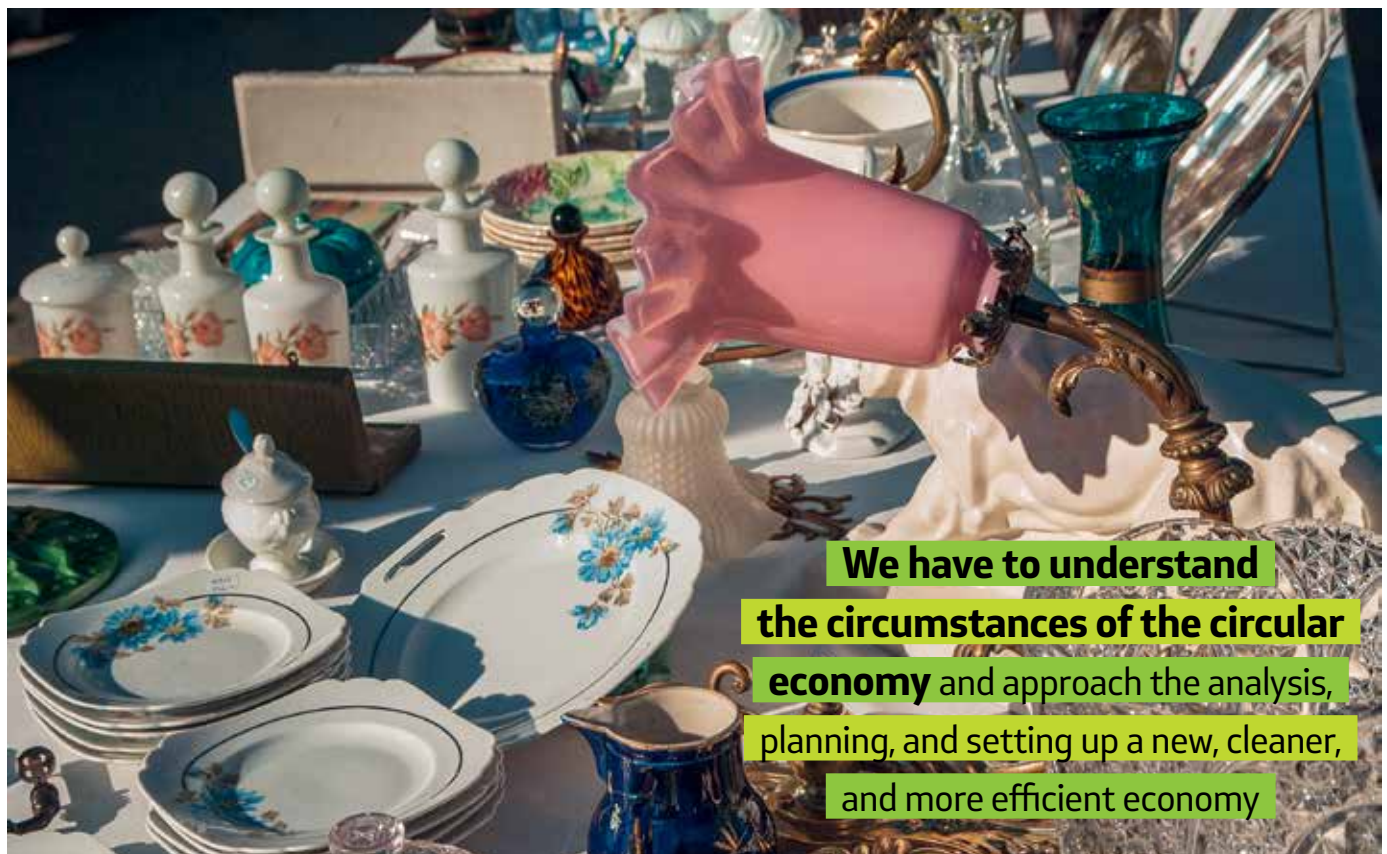
Vinca represents our current knowledge, the availability of options and the situation of waste management. Waste incineration stoves are an outdated technology that is slowly getting out of use in the EU but are a good transient solution for landfills for which there is no other way to clear. The question is whether we will clean out Vinca or

we will leave it to "leak" into the land and rivers, and it is also a question of how we will implement new heat energy to the city and at what price.

We have to learn from the mistakes of European countries and we must not repeat them. Denmark is "locked" in waste incineration and there is no justified economic logic of switching to product recycling. Italy is being prosecuted for fraud related to deposit fees. The whole EU has no synchronized standards for measuring waste treatment. After the ban on the use of mercury in electronics, Britain got an economy with even worse materials while mercury was exported in products for the African market.

EP *How can an individual act more responsibly towards the environment and waste disposal if there are no recyclable islands in the area? Could you mention some alternative purposes for things that are commonly thrown away?*

Milan Veselinov The first question before throwing is why we throw it? Is it because there is not enough space in the wardrobe or refrigerator, or because the product is outdated because it cannot be repaired or we did not even try to repair it? That question starts with us, consumers. And if we cannot use them for the intended purpose, then your question arises: What else can it be used for? There are a lot of ideas on the Internet how to make new things from old things but we often do not have time or skills to devote to each waste product, nor is that the ultimate goal. There are already workshops that make new furniture out of the old one, and your textile can be used either in second-hand



We have to understand the circumstances of the circular economy and approach the analysis, planning, and setting up a new, cleaner, and more efficient economy



Change is an inevitability, and **our task is to make the best of it in these changes**, so there is no division into winners and losers, but only the division into those who accept and lead changes and those that will be led by changes

shops or as a donation to those who don't have enough or it can be used to make another clothing item. There are big companies that start to operate according to the principles of circular economy in the sphere of textile, household appliances, transportation, accommodation, etc.

Your thrown T-shirt can be turned into a bag. A worn-out bag can be converted into a tent, and then in wall insulation. Used-up insulation can eventually be, if it is made from materials that do not damage the environment, directly returned to nature, or if it causes damage, it can be burned and we can obtain energy from it. From the same amount of resources, we have 5 life cycles, 5 market values and 5 different purposes.

Prior to other purposes we should ask ourselves in what way and how much we use the products for the first purpose? For example, on average the car is on the parking lot 95 per cent of time. The drill is 99 per cent of the time in the pantry. Why do all neighbours in a building have to have a collection of equipment and materials that are not being used, that occupy space and take resources from other products? In Sweden and the Netherlands, but also in other European countries, the so-called library for tools where people rent tools, repair cafes where people get their tools repaired, etc. Instead of waste, we should improve product use and extend its lifetime. Solutions are ahead of us and technology allows us to quickly reach new business models that will popularize such use of products and raw materials.



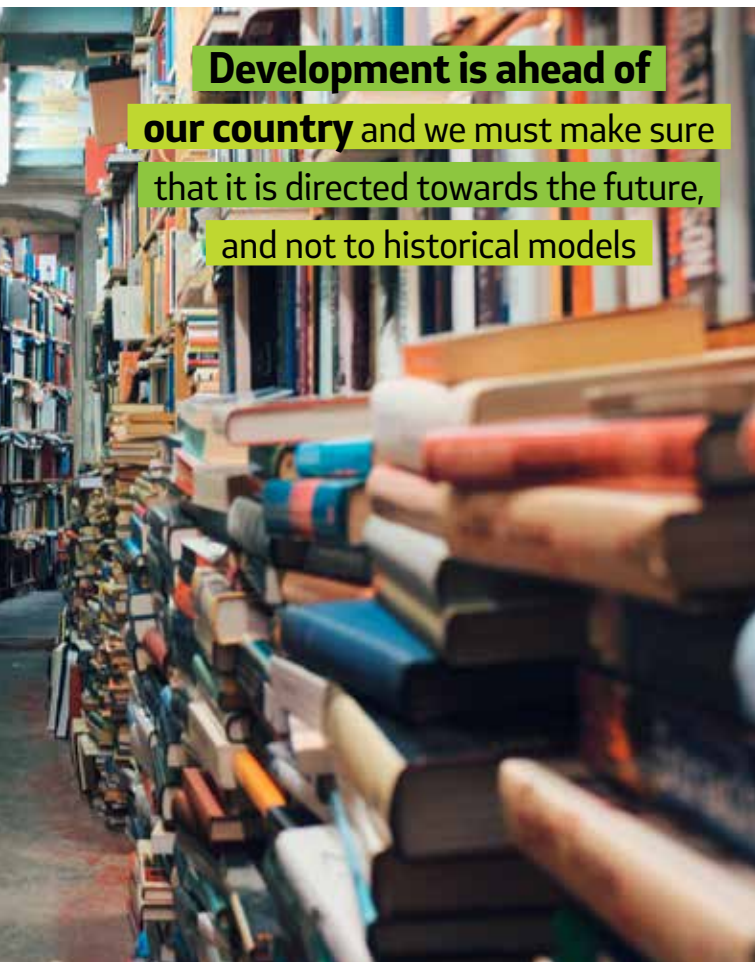
EP Which Serbian companies could you praise for being socially responsible for the introducing the principle of the circular economy into their business – whether it was their basic field of activity, whether they deal with something else but have embraced recycling in a aspect of their work?

Milan Veselinov We are at the very beginning of the development of the circular economy, so there are not many companies dealing with the circular economy. “Esotron” plant, for example, processes waste oils and animal waste into usable products, “Cleaner Production Centre” has launched a new way of doing business through chemical leasing, factories that turn rubber waste into rubber pads, as well as the company “Feplo” that uses waste tetra packs to produce partition boards.

In anticipation of improvements in achieving high standards of both production and emission of harmful substances, the use of renewable energy sources for production and the creation of resource management plans and after their lifespan, these first examples of thinking and doing business in a new way are very important.

We are not the only ones who have problems, more than half of the European Union has no satisfactory apparatus to completely close the circle of matter flow, but it is good that people are working in this field, and they will work even more in the future, both in the world and in our country.

Photograph: Pixabay



Development is ahead of our country and we must make sure that it is directed towards the future, and not to historical models

NUMERICAL ARGUMENTS FOR THE CIRCULAR ECONOMY

- Proper implementation of the CE will save **70% of energy** and **90% of resources**
- Expected financial profit at the European level through CE principles amounts to **1.8 trillion euros** annually
- Annually, we discard **9 million tonnes of resources** that we could use
- We wear clothes on average **5 times** before we throw them away
- **2,500 litres of water** are needed for the production of one T-shirt, which makes a whole Olympic swimming pool

EP How much is recycled in Serbia? Why isn't that percentage higher?

Milan Veselinov No one can say that reliably, but it is possible to give only an estimate ranging from 5 to 15 per cent. That's not enough. Significant investments are needed in order to bring all the necessary capacities, including the collecting network, regulation of the waste ratio, recycling centres and landfill sanitation. Also, a large amount of historical waste versus the tendency to reduce waste generation does not give much room for private investors to willingly accept recycling conditions. We have satisfactory laws if we observe the resource until the time it needs to be recycled. We do not have regulations that determine what happens and under what circumstances after recycling. In addition, the quality of recycled materials is generally not satisfactory, and in doing so, our market is small and does not allow the optimization of the prices of secondary raw materials to the extent that they are attractive to producers. That's why we have the situation that almost the same quantities of secondary paper and metals are imported and exported from the country. Just look at that clean transport cost, if not financially, then resource and indirect, and also publicly denied the cost of environmental impact.

The method of collecting waste is outdated. Today, we calculate the amount of waste per square meter, so whether you generate waste or not, it's all the same. The plan is to change the method of calculation, and in this case, the factor of how much waste we produce should have a significant impact on your monthly bill.

Because of all this, I do not see the long-term success if all the forces focus only on recycling – despite the fact that it is necessary – but also on the construction of a new, modern, circular economy, and non-waste markets. The expertise and strong strategic commitment of both the state and the business world is the key to development in this direction.

Interview by: Jelena Kozbasic



DELTA INZENJERING

Twenty-nine years of successful work and personnel profile of the company make Delta inzenjering an indispensable partner of the largest economic system in Serbia, such as NIS, EPS, Zelezara Smederevo, RTB Bor. Great experience on greenfield projects has created for Delta inzenjering cooperation with companies such as Henkel, Husqvarna, Volvo, Alumil and Ice cream factory Delta – today Nestle. By engaging in a number of responsible jobs, achieved with enviable results, as well as with great expertise and responsibility, Delta inzenjering became a leader in the field of industrial engineering.

The main activities of Delta inzenjering are design, engineering, construction, and consulting. It is a company with 120 employees, out of which 70 are licensed engineers. The aim of Delta inzenjering is to provide the customers with a complete service – from obtaining necessary documentation, through the preparation of project documentation, to the execution of works and providing the use permit. In order to achieve this goal, there are two other companies in the Delta group, Delta preving is engaged in the fire protec-

tion design, and Anakvadrat plus in engineering.

Since Delta inzenjering is engaged in a number of significant projects, it is hard to list them all. We will only mention the most important ones.

One of the big investors is most certainly EPS. Delta inzenjering is running the consortium project and organizing the preparation of the technical documentation needed for the legalization of the facilities of the Kostolac B thermal power plant. Also, for EPS, Delta inzenjering and DTM Consulting from Essen were selected as FIDIC engineer to build a new VI excavator – transporter – sludge system (BTO system) of the Drmno mine. In RB Kolubara – Lazarevac, the testing of the steel structure of the construction facilities for the coal preparation – coal grinding mill on the plant Tamnava istocno polje.

Of all current projects, the project for flue gas desulphurisation in TENT A3-A6 should be mentioned. After many years of efforts to solve the problem of flue gas desulphurisation in TENT A, in September last year, an agreement between EPS and Mitshubishi Hitachi Power Systems (MHPS). MHPS company will build a flue gas desulphurisa-

tion plant in TENT Nikola Tesla A in Serbia. This project should enable the reduction of sulfur dioxide emission and solid particles from TENT and allow our country to reach EU standards in the field of environment. The project will be implemented by a consortium run by MHSP. The consortium consists of Itochu Corporation and our construction company MPP Jedinstvo Ltd. Delta inzenjering has signed a contract with MPP Jedinstvo in the preparation of the necessary technical documentation for the project implementation and obtaining all necessary building permits.

Delta inzenjering has developed the technical documentation required for the legalization of the facilities of warehouses for the oil derivatives belonging to the NIS Blok promet. In December last year, a contract was signed with NIS Naftagas – Technical Services in Zrenjanin on the adaptation of the administrative building and project bureau, which is located within the same complex.

At the end of last year, Delta inzenjering continued its successful, long-lasting partnership with a producer of aluminum profiles, Alumil from Greece. In the final phase of the project implementation, Delta inzenjering is the key to the upgrade of the aluminum anodizing plant.

The company is engaged in the field of

ecology and environmental protection. One of the most important tasks is the development of a project for water treatment and recycling of wastewater within the Grundfos Srbija in Indjija, a plant for the production of pumps and pressure boosting devices. In the Drenik ND factory, the largest manufacturer of paper confectionery, Delta inzenjering is engaged in the preparation of project documentation and the execution of works on the wastewater treatment plant.

Delta inzenjering is implementing many projects in heating plants throughout Serbia. For the needs of the investor, the public company Novosadska toplana in Novi Sad, Delta



The main activities of Delta inzenjering are **design, engineering, construction,** and **consulting.** It is a company with **120 employees,** out of which **70** are **licensed engineers**





inzenjering has developed a project for the reconstruction and upgrade of the Istok heating plant in Novi Sad. For the public utility company Beogradske elektrane – heating plant Vozdovac, Delta inzenjering has developed complete investment-technical documentation for the construction of a cogeneration plant. Based on the Loan Agreement of the German Development Bank – KfW and the Republic of Serbia and afterwards the trilateral agreement on the use of the funds of the Republic of Serbia, intended for the rehabilitation of the district heating system in Serbia – phase IV, Delta inzenjering, as the main contractor in the consortium of Elektrotehnika Juzna Backa from Novi Sad contract on design and execution of works on the reconstruction of the Trkaliste boiler plant in Sabac and on the reconstruction of the heating plant Sportska hala in Ruma



The company is engaged in **the field of ecology and environmental protection**

The aim of Delta inzenjering is to provide the customers with a complete service – **from obtaining necessary documentation**, through the preparation of project documentation, **to the execution of works and providing the use permit**





with public enterprise Stambeno Ruma.

With the company FIAT, Delta inženjering has been a business partner since 2006, when they established a representative office in Belgrade. At that time, the reconstruction of the business building was done, then more hall, administrative building until 2012, when the construction of all facilities was completed.

Recently, a contract was signed for the reconstruction of the Clinical Centre in Belgrade in a consortium with the Slovenian company GH Holding. It is done in the execution and reconstruction of the existing clinical and the upgrade of one tower. Slovenian company GH Holding runs the consortium, and Delta inženjering is a local partner.

Serbia gas company is one of the big business partners of Delta inženjering. Delta inženjering is designing the Nis-Dimitrovgrad gas pipeline for them.

Further plans for the company Delta inženjering lead to keeping leadership position on the domestic market in the field of industrial engineering that can only be maintained with the great expertise and long-term staff experience that is always ready to give young and educated people the opportunity to prove themselves in this business and learn more so that Delta inženjering will remain recognizable and unique in the future company in the field of industrial engineering in Serbia. ■





Una Mijovic, a delegate from Aarhus Centre in Novi Sad

Education and Conscientious Behaviour are Necessary for the Change

September was an important month for Serbia when it comes to the kind of impression we make on the world about our ecological awareness. The annual meeting of the Aarhus Centres was held on September 19 and 20, at Lake Issyk-Kul in Kyrgyzstan. We talked to Una Mijovic, a delegate from Aarhus Centre in Novi Sad, who was invited by the OSCE Secretariat to represent Serbia at this year's meeting. Una explained to us why Aarhus centres are important and in what way they help citizens to actively participate in decision-making at all levels of authority regarding the quality of the environment they live in.

EP Explain to us what it is based on, starting from the very idea of Aarhus?

Una Mijovic The Aarhus Convention or the Convention on the Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters was adopted on 28 June 1998 in Aarhus, Denmark. Its goal is to protect the right of individuals, present and future generations to live in an environment that is adequate for their health and well-being. The Republic of Serbia ratified it in 2009, thus taking the obligation to apply and implement its provisions into the legislation. The significance of the Aarhus Convention is derived from the need of every individual and the entire society to live in the healthy environment, either in a city or in a rural environment, to ensure better and healthier life for present and future generations. The quality of the environment significantly affects our health, and the implementation of the Aarhus Convention allows citizens to participate in decision-making actively and to achieve legal and judicial protection in case of the failure of its implementation. This year is the anniversary for the Aarhus Convention since it was adopted 20 years ago.

EP There are so-called "three pillars" of the Aarhus Convention. What do they represent?

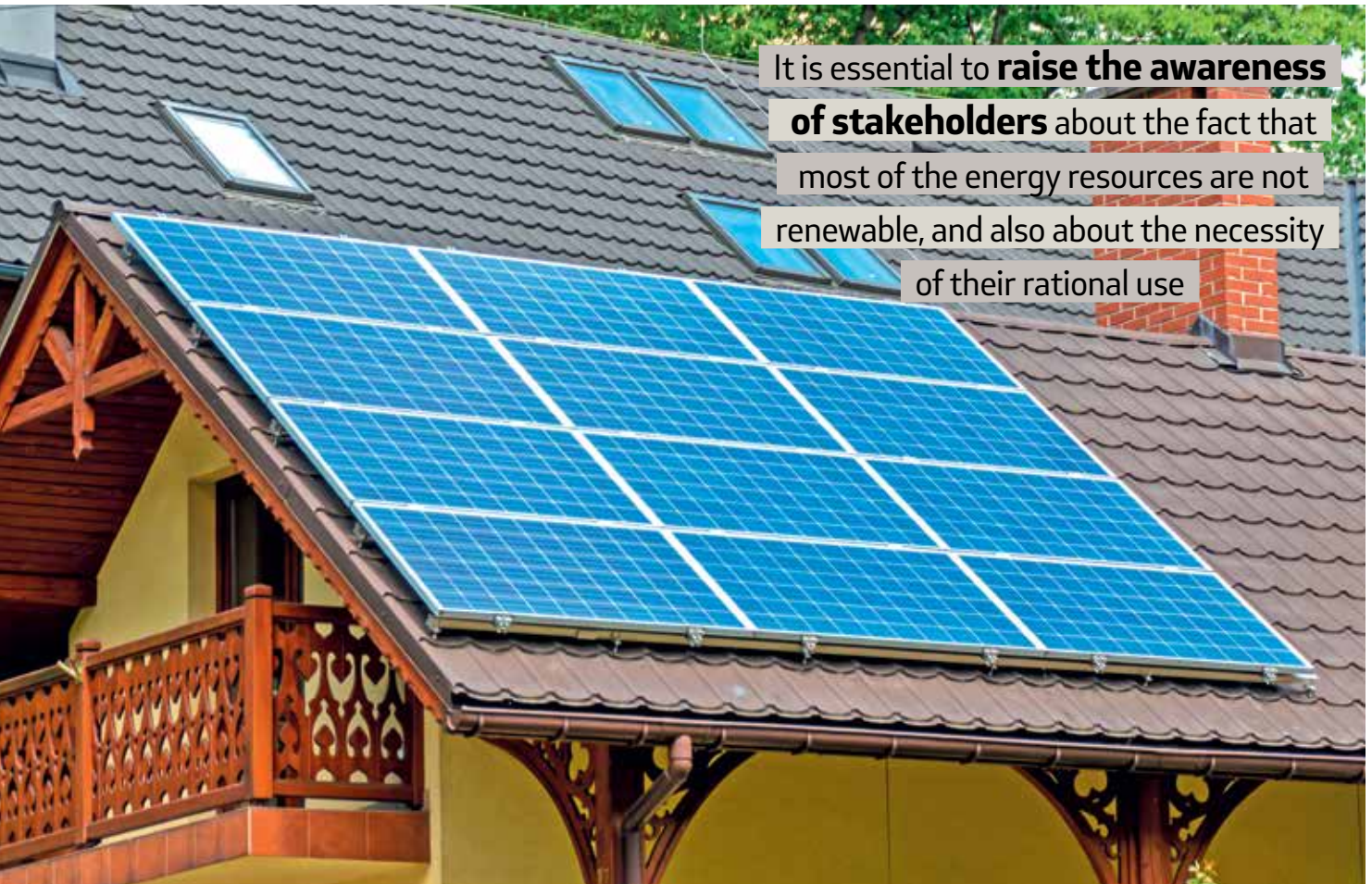
Una Mijovic Yes, the Aarhus Convention is based on three pillars: access to information, public participation in deci-

sion-making and legal protection. The three listed pillars are envisaged as instruments for citizens to exercise their right to live in a healthy environment. The availability of information implies that the citizens have the right to receive accurate, complete and up-to-date information about the environment from relevant institutions and all levels of authority. The participation of the public in decision-making obliges decision-makers to involve the public in the process. This pillar also gives the public the right to be included in the decision-making. The legal protection represents the possibility and the right of the public to demand, before the courts, the compliance of the Convention and the implementation of the right from the first two pillars, in cases when their implementation was initially ceased.

EP How do Aarhus Centres operate in Serbia?

Una Mijovic Aarhus centres are civil society organizations whose goal is to establish cooperation between the citizens and relevant levels of authority, local municipalities, and even beyond that, the implementation of the provisions of the Convention. Their goal is to help all participants in making decisions on issues relevant to environment, and in strengthening their capacities in the implementation of environmental regulations. Aarhus centres should also ensure that the decision-making process in the environmental sector is democratic.

It is essential to **raise the awareness of stakeholders** about the fact that most of the energy resources are not renewable, and also about the necessity of their rational use



There are five Aarhus centres in Serbia, based in Kragujevac, Nis, Novi Sad, Subotica and Belgrade. Together they form the Network of Aarhus Centres in Serbia. Aarhus Centres have been established under the auspices of the OSCE Mission in Serbia. Centres carry out their activities and projects and achieve their goals by mutual cooperation, communication and coordination.

EP *What are the pending issues in the Aarhus centres?*

Una Mijovic Topical themes that Aarhus centres in Serbia are dealing with are waste management, circular or green economy, recycling, water quality, climate change as well as meeting the conditions for opening the Chapter 27 in pre-accession negotiations.

Aarhus Centre in Novi Sad has developed the Study on the progress towards the circular (sustainable) economy in Vojvodina. The Study identifies the challenges that are met on the way of implementing the circular economy in the construction and agriculture. It also identifies the drivers and blockers of eco-initiatives in Vojvodina and examples of good-practices in these areas. This Study is one big venture and the only one of this kind in Serbia.

EP *You have recently returned from the annual gathering of the Aarhus Centres in Kyrgyzstan. What was discussed at the Convention?*

Una Mijovic This year's annual meeting of Aarhus Centres from several countries was held in Kyrgyzstan under the auspices of the OSCE in September. Representatives of 15 Aarhus Centres, relevant Ministries from different countries and international organisations attended this meeting. At the meeting, they shared the information on the activities of Aarhus Centres, experiences and projects that Aarhus Centres have been dealing with. Topics such as toxic waste management, with a special emphasis on the Centres involved in solving uranium problems in the countries of Central Asia, then strengthening the risk management capacities, reducing the risk of natural disasters and climate change at the local level, as well as the approach to water management and the promotion of green (sustainable) economy and resource efficiency at the local level were in the focus.

EP *What made the strongest impression on you at the Convention? Were new goals set up there and how would that affect Serbia?*

Una Mijovic The annual meeting showed the diversity of environmental problems and issues that countries in different parts of the world face while implementing the Aarhus Convention. The focus was on the conversation on how to achieve the goals the 2030 Agenda for Sustainable Development. By sharing ideas and experiences, we have come to the conclusions how we can implement our goals and influence the creation of a healthier and sustainable environment in a better way.

EP *How would you rate the level of implementation of the circular economy in Serbia? How much do we lag behind the developed countries and what else is necessary to be done?*

Una Mijovic The implementation of the circular economy in Serbia is in the initial phase. Having said that, our reality and our mindset of the main stakeholders and citizens is more prone to the linear economy, which is based on take-make, consume-throw approach. It is not much thought about recycling and the use of renewable energy sources. It is essential to raise the awareness of stakeholders about the fact that most of the energy resources are not renewable, and also about the necessity of their rational use and the fact that economic development must be carried out with minimal damage to the environment.

EP *What is the biggest obstacle to the implementation of the circular economy in Serbia?*

Una Mijovic In my opinion, it is necessary to raise the awareness of the state administration and the local municipalities, as well as citizens in the promotion and implementation of circular economy, the suppression of the appearance of illegal and unscrupulous construction, negligent behavior of farmers and education of farmers about the damage that conventional fertilizers are making on the healthy environment. To this end, Aarhus Center from Novi Sad organized a number of public debates and exhibitions and panel discussions during summer where we worked on the promotion of the importance of energy efficiency, green construction or smart buildings, waste management, and recycling.



"Aarhus Centre Novi Sad organized a number of public debates and exhibitions and panel discussions during summer where we worked on the promotion of the importance of energy efficiency, green construction or smart buildings, waste management, and recycling"

EP *How would you rate the environmental awareness of Serbian citizens and in your opinion, what would contribute to further rise of environmental awareness best?*

Una Mijovic Unfortunately, due to existential problems that Serbian citizens face every day, ecology and environmental protection are not in the foreground, they are even neglected. The environmental issue is always pending as something that is necessary, but in practice, its protection is missing. I think that educating citizens about the impor-

tance and impact of a healthy environment on the quality of everyday life of each individual and also how easy is to recycle and how much it contributes to environmental protection. This education would contribute to the rise of awareness and citizen's desire to think about the environment as something important to themselves, but also as the legacy we leave to future generations. In achieving this goal, the role of state administration and local municipalities is important in providing easier and more efficient



way of recycling and use of renewable sources, as well as in encouraging citizens to participate in environmentally conscious thinking and acting. I am afraid that the competent institutions are currently quite inert in this area. The legal framework exists, but in practice, its implementation is not efficient enough.

EP *In the simplest way, how would you explain to the uninformed citizens the reasons for implementing the circular economy?*

Una Mijovic The moment when citizens realize that current major investment, for example in the construction of buildings, can achieve great savings in the future, or when they realize that with one small effort to recycle used products or use alternative fertilizers that they greatly contribute to improving the quality of the environment, then I believe that the concern about the environment and ecology will also increase. For example, after use, one plastic bottle can be discarded and left to decompose by itself or it can be recycled, and a new product can be made from it, which would protect the environment, and the bottle would become a renewable energy source.

Prepared by: Milan Zlatanovic



Suzana Obradovic, General Secretary at Recyclers Association of Serbia

Government and Recyclers Partnership Offers the Best Solutions

During the recycling process, waste is converted into raw materials that can be further used in the production process. The use of recycled materials saves natural resources and energy. Recycling pollutes the air, water, and soil less than primary raw materials production. Recycling provides new jobs. Benefits are great but do we recognise the significance and do we have recycling opportunities in our country?



People in the Recyclers Association of Serbia say that citizens are incredibly interested in the recycling of different products.

“Citizens and companies report to our Association every day on various issues. They most often ask where and how home appliances are recycled but they are also interested in recycling bulbs, batteries, glass, rubber. There are also those who would separate household waste in four categories because, for example, they saw it while they were staying in Germany. Household managers who are interested in collecting a certain type of waste within the building contact us very often”, says Suzana Obradovic, General Secretary at Recyclers Association of Serbia and adds:

“I believe that the citizens who take care of recycling are proud that they did a seemingly small thing on that day, but significant for the environment, whether they threw plastic bottles into a dedicated bin, called the recycling centre to take over the old TV or took the worn-out batteries to the stores that collect them.”

Obradovic points out that the constant education of citizens is necessary because there will always be individuals

**The recycling industry wants to be
a partner to the government
to reach the best solutions together**

FIVE YEARS OF RECYCLERS ASSOCIATION OF SERBIA

The most important recycling and collecting companies founded Recyclers Association of Serbia in 2013. The association aims to promote the interests of recyclers and collectors, through joint activities, as well as to promote the principles of environmental protection and to keep up with the development of the recycling industry through a partnership dialogue with the Government of Serbia. The Association actively works on the education of citizens and cooperation with the media with the aim of raising social awareness about environmental protection and the importance of recycling.

Members of the Association are companies that deal with products that after use become special waste streams such as tires, electrical and electronic devices, oils, accumulators, vehicles, as well as companies that work with metal recycling. Companies within the Recyclers Association of Serbia are: Bozic i sinovi, Pancevo, Braca Ilic, Backa Palanka; Eco-Recycling, Novi Sad; Eko metal, Vrdnik; Eko sistem, Petrovaradin; E-reciklaza, Nis; Hemigum, Gornji Milanovac; Inos Balkan, Valjevo; Jablanovica, Raska; Jugo-impex, Nis; Jugopan, Novi Sad; Maxi-Co, Zitkovac, Metalprom, Valjevo; Pneutech, Vrbas; Protekt Point, Prijepolje; Rec-ee-o, Belgrade; Set Reciklaza, Belgrade.

who do not pay attention to the environment without realising that they do damage to their health.

“There are still those who throw their old washing machine in the woods or a refrigerator in a canal. It is necessary that we constantly work together on educating citizens – state, media, NGOs and the recycling industry. On the other hand, in many villages, there are no regular garbage containers. This is not a justification for the existence of hundreds of wild landfills, but sometimes it takes a lot of energy for citizens to take care of the waste. Only if we have containers, dedicated bins and a generally more organised waste management system, and we educate the citizens, the results will be visible very quickly. When there is a complete system, then penalties for improper disposal of waste can be applied to each negative case.”

Due to the technology that is developing at high speed, there are more and more electronic and electrical devices that need to be replaced. The Recyclers Association of Serbia invites citizens not to throw these devices in nature and not to store them in the basement because these appliances when they are depleted, become hazardous waste as they contain substances that are harmful to the environment.

Citizens can hand over all the devices to the nearest recycling centre or call the recycling centre to take over the device at their address. If they buy new appliances, they can inquire in a store whether they can hand over their old machine for recycling. In this way, old appliances will be adequately cared for and they will not affect the environment and human health negatively.



Netherlands. Given that our country still needs to do a lot of work on introducing bicycle routes to traffic, this may be a good opportunity to consider the application of this model. The point is that if we are about to start something, let's find the best solution right away."

Obradovic says that there are also Serbian companies that are already engaged in the production of recycled materials and emphasises that such a production should be more stimulated.

"One example of the good practice of circular economy is the production of rubber granulates by recycling of waste tires. In our country, around twenty companies use rubber granulate as a raw material, and various products can be obtained such as sports grounds, children's playgrounds, insulation material, garbage cans, auto parts, lining for stables, railway crossroads, etc. Also, one company produces eco-poles of recycled materials used in agriculture and construction, and the other produces waterproof plates from the recycled cartons which are used in construction."

Recycling and Circular Economy

We lived in times of uncontrolled usage of resources, high energy consumption, and nobody paid attention to the environment. Although the pressure on the environment is tremendous, changes and investments have been delayed. Now, Chapter 27 on the environment commits us to significant investments in the process of Serbia's EU accession. Likewise, the circular economy is becoming topical, a model that completes the production process, from production, through recycling, and to reproduction.

"We are far behind European countries in the field of environmental protection since our country did not deal with these issues or it dealt only sporadically in some areas. Waste management in Serbia is at a very low level in almost all segments. However, we can now use the very best practices from countries that are far away. For example, the recycling of home appliances, tires, vehicles and others started late in our country, but when it started, the companies have acquired the most modern recycling equipment and now have the best facilities in this part of Europe," explained the interlocutor from the Association of Recyclers of Serbia.

"The other day, it was announced that the first bicycle path made entirely of recycled plastic was set up in the



Problems and Solutions

The state provides incentives for operators of special waste streams for the disposal of waste, which should be paid after each quarter. Special waste streams include products that require specific treatment after use, as they have hazardous waste characteristics, such as waste oils, waste tires, electrical and electronic products, batteries and accumulators and waste vehicles. People from the Recyclers Association of Serbia point out that we are the end of the third quarter and that the companies have not been paid for the work so far in 2018. In addition, the state owes companies part of incentive funds for waste in 2016 and 2017, in the total amount of about 1.7 billion dinars.

“The legal obligation stipulates that hazardous materials from the processed waste will be permanently taken care of within 12 months, and this is only possible if they are exported for the final treatment. So, for the export of hazardous materials, recyclers pay in advance, so they are forced to borrow loans from commercial banks,” they explain in the Recyclers Association of Serbia.

As a solution, in the Association, they give a model of dedicated spending of money from the eco-tax, as well as

the full functioning of the Green Fund.

“The collection of ecological taxes is growing year by year. The problem is that all the money that is charged through the eco-tax, according to the ‘polluter pays’ principle does not go to the Green Fund so that the entire amount is directed to the environment, but it remains in the budget of the Republic.”

At the Recyclers Association of Serbia, they are convinced that if a stable incentive system was established, the operators would work full capacity, that is, they would take away more hazardous waste, and conditions would be created for the opening of new plants and hence for the recruitment of a large number of people in the recycling industry.

“We believe that the state will soon take significant steps towards improving the environment, that in the budget for 2019 there will be more money for ecological projects, that the system of collecting eco-tax will be improved and that the money from the eco-tax will be spent for environmental protection. A lot of work is awaiting our country. In this regard, the recycling industry wants to be a partner to the government to bring together the joint forces to the best solutions for all problems and as soon as possible, make significant steps towards improving waste management.” ■



One example of the good practice of circular economy is **the production of rubber granulates by recycling of waste tires**. In our country, around twenty companies use rubber granulate as a raw material.

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The logo for SLV, featuring a stylized yellow and black symbol to the left of the letters "SLV" in a bold, black, sans-serif font.

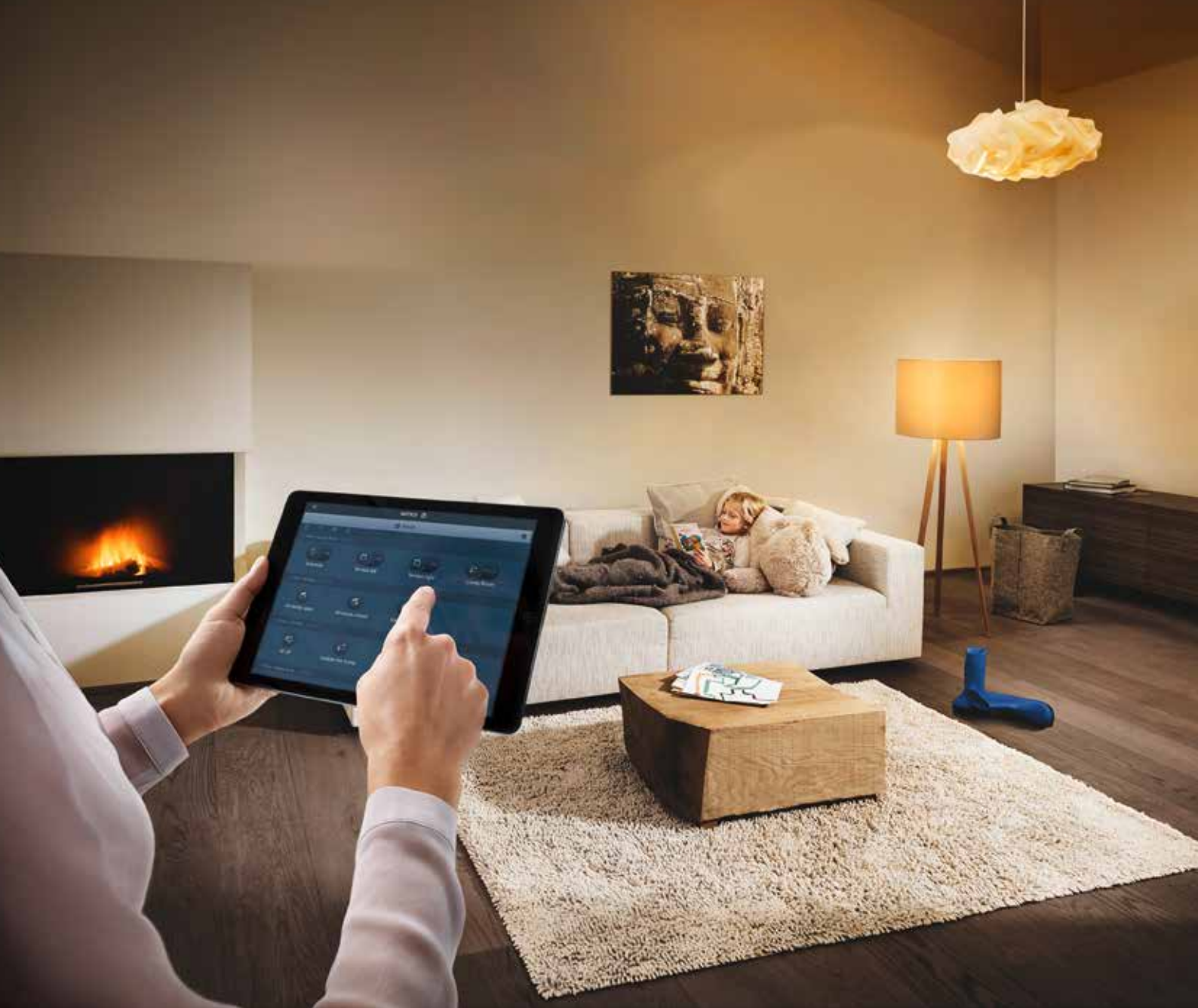


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