



# ENERGY PORTAL MAGAZINE

NR. 10 ■ 2018.

## SUSTAINABLE DEVELOPMENT

**GORAN  
TRIVAN**

Minister of  
Environmental  
Protection

Ecology is  
the first issue  
that brings us  
together

**ARNE SANNES  
BJØRNSTAD**

Ambassador of Norway

Electric aircrafts  
and ships are part  
of our ambitious  
economy

**BOBAN JOKSIC**

BBD GROUP

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Dear readers

Environmental protection encompasses all aspects of our lives and requires the responsibility of each individual, company, and institution. Therefore, we have prepared interesting stories and interviews in the new issue of our Magazine on the topic of "Sustainable Development", including the interview with the Minister of Environmental Protection Goran Trivan, who encouraged us to return to the roots and nature and also suggested to plant at least 5 trees per year.

Given the fact that Norway has extremely high emission of greenhouse gases, we have talked to the Norwegian Ambassador in Serbia, Mr. Arne Sannes Bjørnstad about technologies they apply to reduce the imprint and also about the donations they provide to other countries for the environmental protection.

We also spoke with the representatives of local self-governments of Kladovo and Pirot about investments in renewable energy sources and the possibilities of applying for pre-accession funds from European Union for rural development (IPARD).

In a conversation with Elvir Burazerovic, the executive of NGO ORCA, we learned what we need to do in order to make our agriculture sustainable, what ORCA is doing in this sector and what kind of consequences for nature we will have if we do not change our way of managing agricultural holdings.

In addition to domestic companies, CEEFOR and MT-KOMEX, in this issue we also have a world-renowned consulting company NIRAS, that fully implements the principles of the United Nations Global Compact making them an integral part of their strategies, policies, and procedures. They actively contribute to faster development of many countries in different sectors.

In the sector People and Challenges, you can read two interesting stories about brave efforts of our people to improve the health of people and nature.

Find out in what way domestic companies can help in prevention of environmental protection in an interview with Dusan Stokic, Head of the Department for Environmental Protection, at the Serbian Chamber of Commerce.

Sincerely,

*Nevena Djukic*

Nevena Djukic  
Editor in Chief

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Minister of Environmental Protection

Vinca and Afforestation are Two Examples of Joint Actions

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Ambassador of Norway

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## Goran Trivan

The Minister of Environmental Protection

# We Must Take Care of the Branch We are Sitting on



6

**T**he term “sustainable development” originates from forestry and in short, it means that a man can cut down as many old trees as he has planted. In an attempt to come up with an answer to the question whether we have cut down too many “trees”, we spoke to Goran Trivan, the Minister of Environmental Protection.

**EP** When we talk about harmful effects of human impact on the environment, would you say that we are already cutting the branch that we are sitting on?

**Goran Trivan** We are cutting it very successfully. It does not sound optimistic, but it is realistic. If you take into consideration that civilization has been dealing with a sustainable development strategy for fifty years, as well as the results that have been achieved in the meantime, the fact is that there is a shift in various areas, from construction to CO<sub>2</sub> emissions. However, these are sporadic successes that are actually the paradigm of failure. The process of preserving the environment has been going on for fifty years, and the mean annual temperatures are growing. Although I am an optimist by nature, I am very realistic about this. You need to observe the past uncompromisingly in order to know what to do. In my opinion, civilization makes catastrophic mistakes that cannot be corrected in a short term. Here we go back to the concept that ecology is proud of - think globally, act locally. It is necessary to return to the roots and

**In the period of six years, we have planted more than 700 hectares of new areas in Belgrade. It's not enough, but it's certainly much better than doing nothing**

nature, actually the life itself. In that sense, afforestation is an ideal solution. This is the simplest, cheapest and most effective way to mitigate the effects of climate change. We should bear in mind that climate change is not only a consequence of man's actions, but also that they are happening for millions of years on the planet beyond human influence. Nevertheless, a man certainly made a decisive contribution to making those changes tangible and visible more quickly.

While I was City Secretary for Environmental Protection in Belgrade, I could experiment with this idea of afforestation. In the period of six years, we planted more than 700 hectares of new areas in Belgrade. It is not enough, but it's certainly much better than doing nothing. This effect will be felt by our children in ten years, if we take care of every tree and if we replace each tree that dries out. That does not even cost much.

**EP Do you feel that the public is sufficiently familiar with what you achieved so far on the position of the City Secretary for Environmental Protection?**

**Goran Trivan** I did not work with the goal that someone notices and acknowledges my efforts, but out of the conviction that any positive change that I bring into living environment continues to live. However, my team and I realized that our activities were not well known to the public. We have been slowly changing our approach for several years now, so that the result of our effort does not remain within the limits of a narrow circle of people. We are now coming to my favourite point of view – without the media and the civil sector there are no significant results.

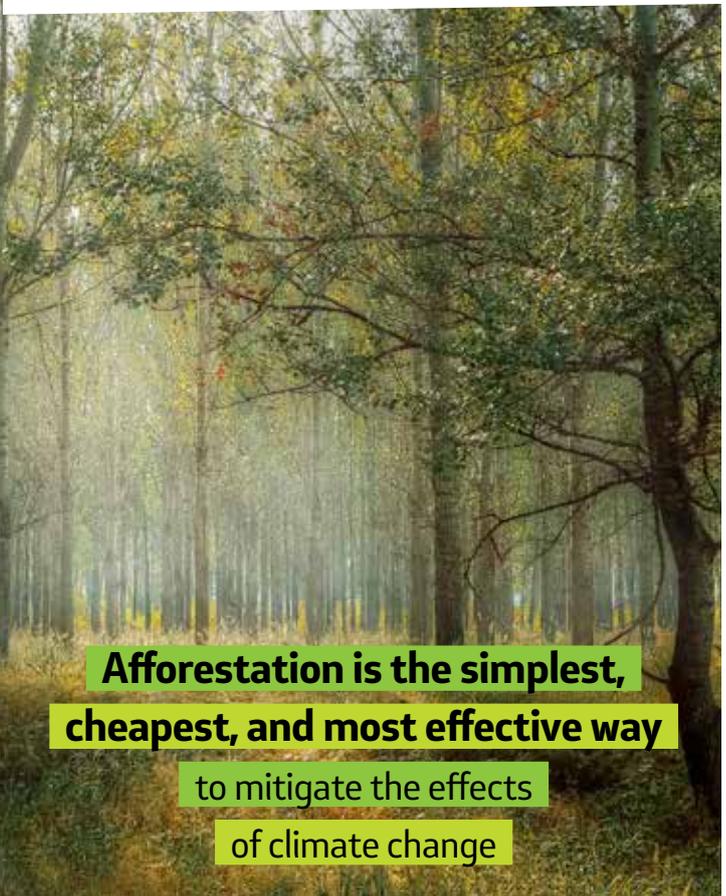
**EP Are decision makers aware of the fact that environmental conservation activities are crucial?**

**Goran Trivan** There are two categories of people in each city. One category is quite ordinary and honest citizens, and the other are completely honest and unusual citizens who are in office and they must know what we have achieved so far. They also must know that nothing starts with them, but that we all replace people who already achieved something before us. So I inherited the previous secretary Branislav Bozovic who initiated the adoption of afforestation in Belgrade. And he is not even a forest

engineer, but a geologist, but he obviously knew what he was doing. I relied on the results of his work and continued to afforest Belgrade. The result is obvious, so we all have to realize that we are not islands and that nothing starts with us. We are part of series.

**EP To what extent is the concept of sustainable development applicable in Serbia and what are the means for its implementation at present?**

**Goran Trivan** I do not like to use the syntagm sustainable development because the very strategy of sustainable development is compromised at a global level. However,



**Afforestation is the simplest, cheapest, and most effective way to mitigate the effects of climate change**



Vinca and afforestation  
are two successful  
examples of joint action  
that obviously  
give results  
– ecology is  
the first topic that  
can connect us  
so that we work  
together as a united team

development can exist in a practical way, without great philosophy, as I did through afforestation in Belgrade. Serbia lags behind the developed European countries in the field of sustainable development for twenty-five years. This can sound depressing, but it can be inspiring as well. We were observing what the developed countries were doing in the past few decades, we realized what they had skipped, and so I can say that we have the opportunity to cross the road, they travelled for a long time, in two or three cascades. And that will happen. In technological terms, it took them a long time to overcome all the challenges. We will not need so much time. For example, a Fund for energy efficiency was established in Belgrade, that you could not even dream about ten years ago. The facades are financed by this Fund – which means insulation, numerous other energy efficiency measures and ultimately aesthetic design.

**EP The necessity for the establishing the Ministry of Environmental Protection and the direction of its operation has been influenced by the European Union in a direct and indirect manner.**

**Goran Trivan** Each track consists of a pair of rails. We and our views on how to care about the environment are on one side, and on the other side is the European Union that is constantly “pushing” in terms of emphasizing the importance of taking care of the environment. It takes time to reach that level of consciousness that the Scandinavian countries have. With the establishment of Ministry, we are in the position to grow and enter all the strata of the society and country. We will have meetings with all the ministries in the Government, because there is no area in which ecology can be a secondary topic. We want to meet current European standards, although I have to point out that in ex-Yugoslavia in some areas standards were significantly higher than the current ones in the EU.

**EP Do you plan a public environmental awareness campaign to raise the awareness of its significance in the whole society?**

**Goran Trivan** We are planning a campaign because without it we cannot achieve significant results. Dealing with the environment for thirty years, I realized that we must be a part of the world, we cannot skip one stage, but we can go faster. We have to deal with education and PR when it comes to the environment. For many years now, the education of young generations in elementary schools and kindergartens has been successfully carried out on the importance of care for nature. We have full awareness of this and now we have the opportunity to conduct a better campaign. Opinion is the most important segment of the environment. I have started topics that have been bothering us for decades, although they are not dealing with ecology primarily, as it is the case with drinking water. However, water is a resource and that’s why we need to talk about it. Water is life, and we are dealing with the environment.

Our enthusiasm is recognized by other ministers as well. Immediately after the establishment of the ministry in July last year, some ministers came and offered their help. They asked us for advice on what is more appropriate to undertake in their sector. It’s a good sign. By the way, everyone has great expectations from us. Every smart man would ask himself a question – can I achieve all that? We are a team, we have the necessary skills and knowledge.

**EP A lot is written about problems with untreated wastewater, particulate air pollution, a small percentage of recycled solid waste. Can you explain to us what are the biggest problems in Serbia that you are facing at the head of the Ministry of Ecology?**

**Goran Trivan** Hazardous waste is a real example of the situation. On this pattern of our previous behaviour, the public can see how much our environment is polluted. We

will deal with the issue of hazardous waste from now on and we will not give up. We talked to representatives of the Security Information Agency and the Prosecutor's office last year because we realized we had been marking time for quite a while, and that pollution that is buried could produce terrible damage. They offered us their support and I believe that we will be able to discover all the landfills of hazardous waste and bring the culprits to justice. There are a lot of landfills, so we ask citizens to report potential locations of hazardous waste.

In addition to wastewater, we also deal with air quality. Nevertheless, our focus must be the processing of wastewater: municipal, surface and industrial. The reason is clear – waters induce pollution. Then, that water pollutes land and ground waters, which further cause pollution of food and drinking water, and from there come diseases that do not affect only us but the whole ecosystem. We have polluted the land ourselves and now we are wondering why we are sick. And we throw a lot of things in the water! It will not be allowed anymore. You see, even if we had those five billion euros now to invest in water treatment systems, we do not have in local self governments prepared project technical documentation for the plant. And that is the condition for getting resources from any fund.

**EP** That means that your ministry will have to deal with the preparation of the necessary documentation so that you can start solving the problem of wastewater.

**Goran Trivan** Yes, this is also our task. We are becoming a project bureau. Obviously this is necessary, so we have to do it. That is why we have formed a special sector for strategic planning of projects in which our separate team will deal with funds, resources, logical assistance, etc. There is no other way than to help local governments that do not have the means to prepare project-technical documentation (the cost of documentation development can be from several hundred thousand dinars to several million depending on the size of the project).

**EP** How do you plan to solve all these accumulated problems?

**Goran Trivan** We started discussions with professional associations of engineers and university professors. They should be engaged in the preparation of project-technical documentation. If we do not change the strategy, we will need about 300 wastewater treatment systems in Serbia. It's a huge job. However, we now have resources because there are 250 people in the ministry, not counting the employees in the institutions, and we have the opportunity to employ another 180. Out of that number, one hundred trainees will be employed who will replace us and in the next 30 years they will deal with the environment. This is the best and the most important investment.

**EP** You have introduced the idea of lobbying as an instrument that our state can use in efforts to open Chapter 27



## WHO WILL PAY THE COST OF INTRODUCING ORDER IN OUR ENVIRONMENT

Ask a question about who polluted the environment and you will get an answer who has to bear the costs, says Minister Trivan.

There is no doubt that they are inhabitants of this country. So, we will foot the bill. But it is important to pay as much as we can, and not be exposed to high fines. We need to rely on the fact that the state will protect us and take into account the social context, explained the Minister of Ecology.

**and to increase accessibility to the resources that pave our way to the European Union. Can you explain this possibility that is not well known in our environment?**

**Goran Trivan** Everything is lobbying. In our society this mechanism has not the same meaning as it has in the rest of the world. And lobbying is nothing else but positive aspiration to a goal. Every citizen should be a lobbyist for the environment, and the government should lobby in Brussels for our interests. These are legitimate goals and lobbying is a tool of modern times. In the field of ecology, the same principles apply, and who did not understand it, I'm afraid missed the point.

**EP** **Whenever environmental issues are introduced, often the conversation is reduced to controversy about the amount of money that Serbia needs to eliminate essential multiannual problems in the field of ecology, which is a condition within negotiations for the accession to the European Union. What would you propose to do in order to shift the focus of public attention from undoubtedly large and necessary resources towards far-reaching and indisputable benefits for the health of the nation?**

**Goran Trivan** I do not participate at all in the debates that politicize the issue of the environment. Ecology is vital, life issue and there is no place for politicizing. As soon as someone mentions that an individual will have to pay something, I know that politics is behind it.

Frankly speaking, my experience is different – I saw that we could unite around a topic. Take, for example, a waste management project in Vinca. The Assembly adopted that decision without one vote against. How? Because we endeavoured to explain to colleagues from different political milieu that we will not participate in the debate that will politicize such an important topic, concerning the lives of all citizens, our children and grandchildren. Then I stated that I would go public and announce who voted against the project. Last year we signed this contract and proved that it is possible to work differently. Vinca and afforestation are two examples of joint actions that obviously give results. Ecology is the first topic that can connect us so that we work together as a united team.

**EP** **Work on improving the environment opens opportunities for investing, employment, innovative ideas, and general development of society. In your opinion, is this enough in the public eye?**

**Goran Trivan** We are talking here about opening several thousands of jobs. If we only had more money in the budget of the Ministry of Ecology for subsidies for recyclers, several hundred people would be employed for these jobs. Not to mention that there would be less waste, or recycled material that would have to be used as a raw material for production. This is a triple benefit that unfortunately in the previous period we were unable to achieve.

**EP** **Finally, can you propose measures that we can take in order to contribute to environmental protection?**

**Goran Trivan** First, I would invite citizens to plant at least five trees annually. It is not important where. If you are worried about the right to plant on some surface, call public utility company Gradsko zelenilo or Srbija sume if you live in Belgrade or a local utility company in your town and ask them where to plant trees. Be active, take the initiative,



### **UNDISCOVERED HAZARDOUS WASTE REPRESENTS A CONSTANT THREAT**

At the end of last year, more than 100 barrels of hazardous waste were found on three occasions in the Municipality of Obrenovac, and at the beginning of the year a new site with potentially hazardous waste was discovered. Obviously, this problem has become a priority considering the danger that waste may have on human health in the long run. Minister Trivan expects the investigation to show where the waste originates from.

It is speculated that waste is imported, but I believe this is domestic hazardous waste. Still, it is not even important. Definitely someone must accept responsibility. For us, it is important to know the source, quantity, and structure of the hazardous substances we have found. I do not want to deceive the public and that's why I say this will not be a lonely case. There will be more situations like this. And the public must know what is there in the soil, because the soil is the greatest wealth on the planet. Therefore, we will also monitor the court processes when it is determined who are responsible persons, because it is important to have a fair epilogue, which should also be a warning of what will happen to negligent persons if dispose of dangerous waste in an improper manner. For that reason, I ask citizens to report sites with hazardous waste on the email: [opasniotpad@ekologija.gov.rs](mailto:opasniotpad@ekologija.gov.rs).



**We have polluted the land  
ourselves and now we are  
wondering why we are sick.**

**And we throw a lot of things in the water!**

**It will not be allowed anymore.**

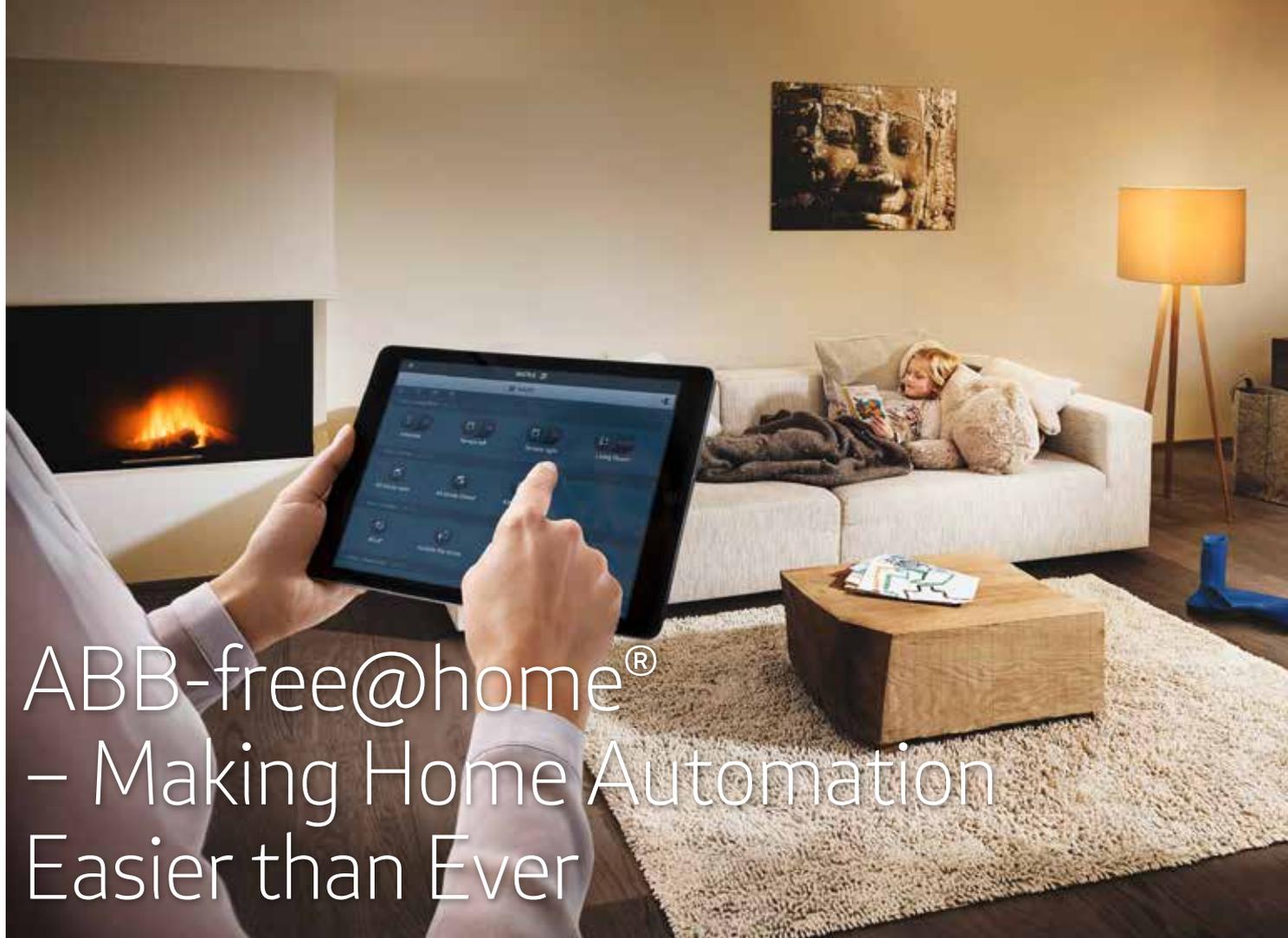
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ask. Any public utility in charge of maintaining green areas can provide you with an answer. If you plant only five trees during your life, they will provide oxygen in the amount that is sufficient for your whole life.

Of course it is not all. Separate waste at home in order to adopt this habit slowly and ask your local government to provide infrastructure. Do not wait for them to teach you what you should do, but impose them a topic they will have to deal with. Primary separation of waste is the next stage in environmental protection in our country. You can drive your cars less often and walk or use public transport more. If you buy cars, you might want to think about hybrid or electric vehicles, or at least an alternative drive that has less emissions. There are also very simple habits like turning off the lights when you leave the room or saving water. Environmental protection covers all aspects of our lives and requires the responsibility of every individual, company, institution. There is also a lot in our consciousness, in responsible behaviour, in disregarding the law. We have to change that.

Interview by: Tamara Zjacic





# ABB-free@home® – Making Home Automation Easier than Ever

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**At the beginning of December last year, in 2017, the Metropol Palace Hotel presented an innovative home automation system ABB-free @ home® which offers endless possibilities for creativity. The system enables the user a large number of functions and options, as well as upgrading the system through use. A unique solution in the automation market.**

Switching Philips Hue lamps using the ABB-free@home® app offers additional flexibility. Commands such as, 'Switch on the light in the living room!' will be taken literally from this moment on, and put into effect. And you will even get an answer, 'Okay, all the lights in the living room have been switched on.' Thanks to the new update for the home and building automation, ABB-free@home®, intelligent voice control ensures even more comfort, safety and energy efficiency in the smart home, as the update not only enables voice commands to be recorded and carried out but also gives a reply. The voice interaction is activated quite simply by pressing the microphone button on the ABB-free@home® app. And then you are ready to start – without any special programming being required. The ABB-free@home® app is easy to understand. To start with, all available devices in the rooms are activated on the display, allowing the favourite settings to be made immediately via drag-and-drop.

Busch-Jaeger makes the access to a world of intelligent living very simple with the ABB-free@home®. The ABB-free@home® enables the lighting, heating, blinds, or

the entire setup to be controlled in an ingeniously simple way using intuitively operable switches and displays, a smartphone or tablet for use 'on the move', and from now on, also using voice commands. And the ABB-free@home® integrates itself perfectly in one's own home, as the controls can be combined with numerous Busch-Jaeger switch ranges. With ABB-free@home® the home seems to be occupied even during one's absence. Whether in the evening when visiting the theatre or during a summer holiday lasting a few weeks – the system can learn and imitate the daily routine of the residents. Such simulation helps to prevent break-ins.

Another special feature of the ABB-free@home® update is the ABB-free@home® app connection to the myABB-LivingSpace portal. Additional simple use of all the functions when 'on the move'. A myABB-LivingSpace account can be coupled with several tablets and smartphones. In this way, it is also possible for all the family members to make changes from their mobile devices when they are out.

An additional enhancement is a new 'Actions' menu, which enables an intelligent combination of different pro-

cesses, using 'if... then', logic. Exceeds room temperature, for example, 25 °C are automatically shut down the blinds. If the movement detector triggered, the user will receive a notice via email or via push notification on their smartphone. For each action, an unlimited number of users can be defined. Similarly, both the indoor and outdoor areas are now perfectly networked with ABB-free@home®. The new weather station (available as from January 2016) will record the brightness, temperature, rain and wind speed outside the home. The sensors of the weather station can be linked to the blinds via the menu item 'Actions'. During windy weather or storms, ABB-free@home® together with a conventional weather station takes care of the independent upward movement of the blinds. This prevents damage such as buckling of the slats or broken window panes. This function is of particular benefit during one's absence because the weather can change unexpectedly.

ABB free@home® connects all components for a fine-tuned indoor climate. The optimum room temperature can be adjusted with ABB-free@home® individually or according to the specific requirement, depending on the time of day and the function of the room. In ECO mode, the temperature is automatically lowered at night



In connection with the door communication system, ABB-Welcome, additional comfort and additional safety are provided. The ABB-free@homeTouch acts as a link. Installing a welcoming setup for visitors, for instance, is particularly useful – as soon as the doorbell rings, the light in the stairwell comes on. Photos of any visitors can also be taken if connected to an ABB-Welcome outdoor video station, and if you are not at home, a tablet and smartphone also show you who is standing or stood outside your front door.

For the electrician, the ABB-free@home® installation is very simple and takes very little time. This saves the owner, of a house or a flat, money. Once it has been installed, the user can change the settings him/herself, using a computer or tablet without monthly running costs. ABB-free@home® is easy to operate and at the same time flexible and adaptable to everyday situations or to those very special moments in life. And here, complete scenes can be played automatically or be set or called up spontaneously to suit the mood. ■



or when the house is empty. The heating can be automatically shut off when a window is open. This reduces the consumption of energy – whether for conventional heaters or in floor heating. The ideal temperature is never the same. Depending on the time of the day, the room temperature controller provides your personal feelgood temperature. The heating valves are controlled wirelessly – with radio-controlled thermal actuating drives. The room temperature controllers can be integrated into the switch combination. And the window contacts are networked wirelessly as well. That is both smart and efficient.



**For more information contact ABB in Serbia:**  
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Arne Sannes  
Bjørnstad

The Ambassador of Norway

It is  
Important to  
Maintain the  
Resources  
we Have

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It is known that the Kingdom of Norway belongs to the group of biggest polluters per capita, which is an inglorious record, that is credited to another title – this Scandinavian country is among the world's largest producers and exporters of oil. Hence, the great interest provoked by Norway a few years ago, when Norway set a rather incredible goal to become a state with a neutral carbon footprint by 2030 is not unusual. Answers to questions about what Norwegians have achieved so far and what role in raising awareness of climate change and reducing emissions has had a comprehensive state campaign Klimaloftet we have requested from Arne Sannes Bjørnstad, the ambassador of Norway in Serbia.

**EP Norway's original goal of neutral carbon footprint by 2030 has been changed, and today you are trying to reach 40 percent less emissions of harmful gases with the same deadline, compared with the 1990s. Which technologies have given the greatest result?**

**Arne Sannes Bjørnstad** Norway has an extremely high emission of harmful gases that are directly related to the production of oil and gas, with most of the energy produced in this way being used in other countries. In order to reduce emissions, we have introduced carbon capture and sequestration technology (CCS). Greenhouse gases are pumped deep underground and under that pressure, oil or gas is released, and its quality is much better. The system



is economically viable because you use harmful gases to expel more oil and gas to the surface and you do not use another type of energy for their pumping.

In some areas, we have achieved significant results. One of them is electromobility, and we can boast that the entire city transport is ecological. Although we have metro, trams and electric buses, the bulk of public transport in Oslo is on biogas that comes from waste. That waste used to be an expense because we had to pay for the transportation and disposal of garbage and in addition we assigned money for fuel for buses. Now we use waste as a fuel. It is not only economically viable but also a good example of reducing gas emissions.

**EP** You mentioned electromobility. Norway is the leader not only in Europe but in the world as well, according to the statistics for 2016 as much as 4 to 10 cars sold in your country were hybrid or electric. What are the benefits the buyer can count on when buying an electric car?

**Arne Sannes Bjørnstad** I often joke when I say that in Norway Tesla is better known as a car than it is known as a scientist. This is due to the number of Tesla cars. There are significant tax exemptions that allow the purchase of a luxury electric car for the price of a standard, conventional car. In addition, there are other privileges for driving

electric cars. There are reserved free parking spaces in the city area where the owner of an electric car can also charge it. This is one of the better benefits, because “fuel”, which is quite expensive in Norway, is free of charge. Even tolls paid by owners of electric cars are cheaper than for the fossil-fuelled cars. Also, electric car drivers can use yellow lanes for buses and taxi drivers, thereby avoiding usual traffic jams, especially if they travel from the center of Oslo to the suburbs.

The ambitions of the Kingdom of Norway are high and there are many initiatives for further change, not just when it comes to cars, but also other forms of transport. We plan to introduce electric aircrafts by 2040 that will operate on shorter routes, and there are also programs to use electric ships. Our goal is to switch to an electric economy instead of a carbon-based economy. We even had a serious debate about the traffic ban introduction in the next few years in Oslo for petrol and diesel-fuelled cars. Some of these projects are just ambitious ideas that we may never meet, but we cannot know it until we try.

**EP** Would you say that choosing environmentally friendly solutions in your country is primarily attributed to the mentality of the population, or subsidy and other benefits have a greater impact?

**We plan to introduce electric aircrafts by 2040 that will operate on shorter routes, and there are also programs for the use of electric ships.**



**Arne Sannes Bjørnstad** I would say that this is a set of various influences. It is partly due to the education but there are also political and sociological influences when environmental protection is concerned, as well as other reasons. Norway is a poor country when it comes to natural resources if you exclude oil and gas. Due to climatic conditions, agricultural production is a real challenge. On the other hand, we traditionally care about nature because we do not have too much of it and we can see that by the fact that the stock of fish is getting smaller. And we live from nature. We need to maintain and preserve the natural resources that we have. Considering that we were poor before

### CAN WASTE PROVIDE FUEL FOR HEATING AND DRIVING CARS?

The huge quantities of waste accumulated just in our capital on annual basis (for example, in Serbia more than 300 kg of waste is produced per capita annually, when this is multiplied by the number of residents in Belgrade, we have a clear insight into the waste problem situation) requires high transportation costs and adequate disposal. Thanks to innovative technological processes, waste is no longer a ballast that needs to be solved but serves as a resource in many countries. Ambassador Bjørnstad believes that this kind of waste treatment system could provide fuel for heating or public transport just as it was developed in other metropolises. However, this requires an initiative.

The Norwegian company CAMBI owns one of the most developed technologies producing biogas from waste and has branches all over the world and in Serbia as well. Their system is used in London, Washington, and Manchester and in many cities around the world, and for its introduction in Belgrade, it is necessary for politicians and city authorities to see waste as a resource. In this regard, there is a need for a system which implies that the state invests in such projects or that a public-private partnership is created. It is a question of mentality as well as of the idea. Also, it is both legal and economic issue because it should be estimated how much it would pay off for the city authorities to buy the produced fuel for public transport as well as for the companies that would build the waste treatment plant - says Ambassador Bjørnstad.

the discovery of oil supplies, we learned not to throw anything away and the tradition of reusing things or recycling has existed since then.

Today people have become more aware of the threats that climate change poses because of climate change and you can clearly see the effects. In the north of Norway, there is a very famous glacier which has always been a great tourist attraction. However, it is disappearing at a high speed, and this is very shocking for people who live from tourism in that area. This very visible evidence is a powerful argument for all advocates of the fight against climate change.

### EP What percentage of electricity produced in Norway comes from renewable sources?

**Arne Sannes Bjørnstad** In our country as much as 99 percent of energy comes from hydropower. We produce enough electricity for our needs, but there is also a seasonal need for importing or exporting the surplus produced. During droughty summers we have a lack of hydropower energy, so we import energy from Denmark or Sweden with whom we have a common electric energy market. This system was established initially as a Nordic initiative, and now Britain, Sweden, and the Netherlands are also members of the common market. In the future, membership should naturally grow. We are also trying to help in the introducing this system in the Balkans, and this takes time. It is necessary to increase the electricity production and expand the market, and that is currently being done.

### EP When it comes to environmental protection, you do not only take actions in this field in your own country but also in countries that are very far from you. Can you tell us what encourages you to invest in climate change prevention measures, for example in the Congo area, which includes Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Republic of the Congo, Equatorial Guinea, and Gabon?

**Arne Sannes Bjørnstad** I would say that there are several reasons for this. It is probably partly due to the fact that we have this tradition to help people in distress in other parts of the world, but partly because of the consequences that we also feel in Norway if something happens in Congo or some other region of the world. In addition, the decision is influenced by the efficiency you can achieve for the money you invested - for the same money invested in environmental protection you can achieve much more in Africa than in Norway. In this case, it is not only a matter of reducing the emission of harmful gases, but also the preservation of a rainforest that purifies the air. We need to think about the whole cycle, not just about its individual parts.

Without stopping the production of oil and gas, we cannot significantly reduce the emissions, and when the situation is already as it is, then we look for the countries we

**With one million invested**  
in Norway, we can reduce gas  
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could help and in some way compensate for the harmful effect. With one million invested in Norway, we can reduce gas emissions by 1 per cent, while for the same amount in Congo, Brazil, Indonesia or in some other country we can reduce emissions by 20 percent. The numbers are really shocking. This project is not only philanthropic but also logical, as the Congo Basin with important rainforest ecosystems extends over 6 African countries.

**EP When did the first environmental campaigns in your country begin?**

**Arne Sannes Bjørnstad** The environmental protection campaigns have already been organized in the late 1960s. The goal of these campaigns was to prevent the creation of economic and other types of waste. Climate change came a little later.

Klimaloftet is currently on, a very efficient government campaign, which should raise awareness of the conse-

quences of climate change and the preventive measures we can all take. This is a PR campaign that also included the most popular Norwegian comedian. In a funny way, he presented important messages about climate change, and there were also scientists who talked about glaciers and other serious consequences. And these awareness-raising measures did not only imply trivialities, everyday things that you can do but great things that you do not usually think about. Klimaloftet consists of different initiatives either in fun or in serious format, depending on the audience you want to reach.

**EP You have been the ambassador for two years and during this time your country has been an important donor in Serbia. Which programs would you identify as the most significant ones?**

**Arne Sannes Bjørnstad** It is hard to say which programs are the most important or the best ones since many have



not in the focus of the media and those who attract more attention because they are directly targeted at a majority of people. I must admit that despite our lower project visibility, we still receive positive messages.

### **ENVIRONMENTAL MANAGEMENT INDEX (EPI) FOR 2018**

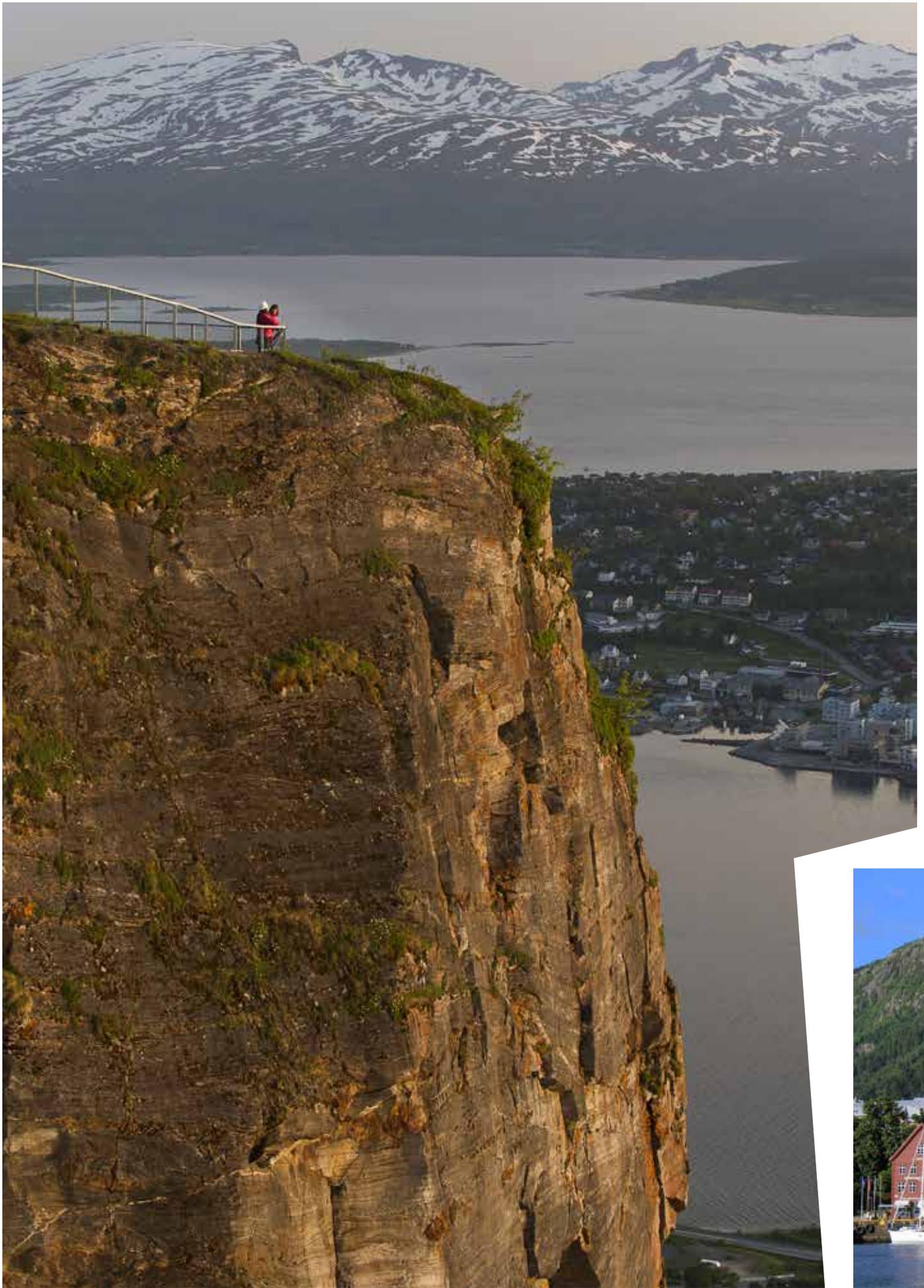
According to this year's report on the overall environmental management index, which determines and compares environmental performance among countries, Norway ranked 14th place, while Serbia occupies 84th place. There is an interesting result achieved, for example by Costa Rica taking the 30th place if we take into account the fact that their gross domestic product is significantly lower than the Norway's. We asked the Norwegian ambassador how he evaluates the success of these three countries.

Costa Rica has long been aware of its environment and the need for environmental protection. In addition, it is quite different from the surrounding countries. There is a strong middle class in this country, and tourism is an important industry. When it comes to environmental protection and climate change, most things are being carried out by citizens themselves, and not by politicians. I would say that there is more competition nowadays in the measures taken by the countries to protect the environment, and that it is the reason for the drop in rankings for Norway.

We are indeed investing a lot of money and achieving results in preserving the natural environment, but as I said, if the same money were invested in Costa Rica or Serbia, the results would have been much higher. According to the statistics, we are currently 3 percent above the average emissions we had in 1990, but we are 1.5 percent below the ones we had a few years ago. These are the data from the end of 2016, and when the data for the previous year are published, I believe they will be better. Numerous countries are actively involved in the fight against climate change and are introducing significant measures to preserve their own environment, which is always a good thing for the entire planet.

been successfully implemented. Of course, there were those less successful. However, work methods changed over the years. 20 years ago, we cooperated considerably more with municipalities, and less with the state. Some of these projects were very successful. Today, the working principle is different, and it seems to me that some of the best projects we are working on are not visible enough since we work with the Ministry of Labor, Employment, Veteran, and Social Policy, or with the Ministry of Internal Affairs, which is not perceivable to most of the population. One of the good examples of such projects is the establishment of forensic laboratories in Serbia. We have done a lot in the judiciary and cadastre as well. Citizens were able to feel the positive changes that were a direct consequence of our cooperation with those institutions as there was an improvement in the services they provide.

I think we will continue to work in a similar way, but we will nevertheless find a balance between projects that are

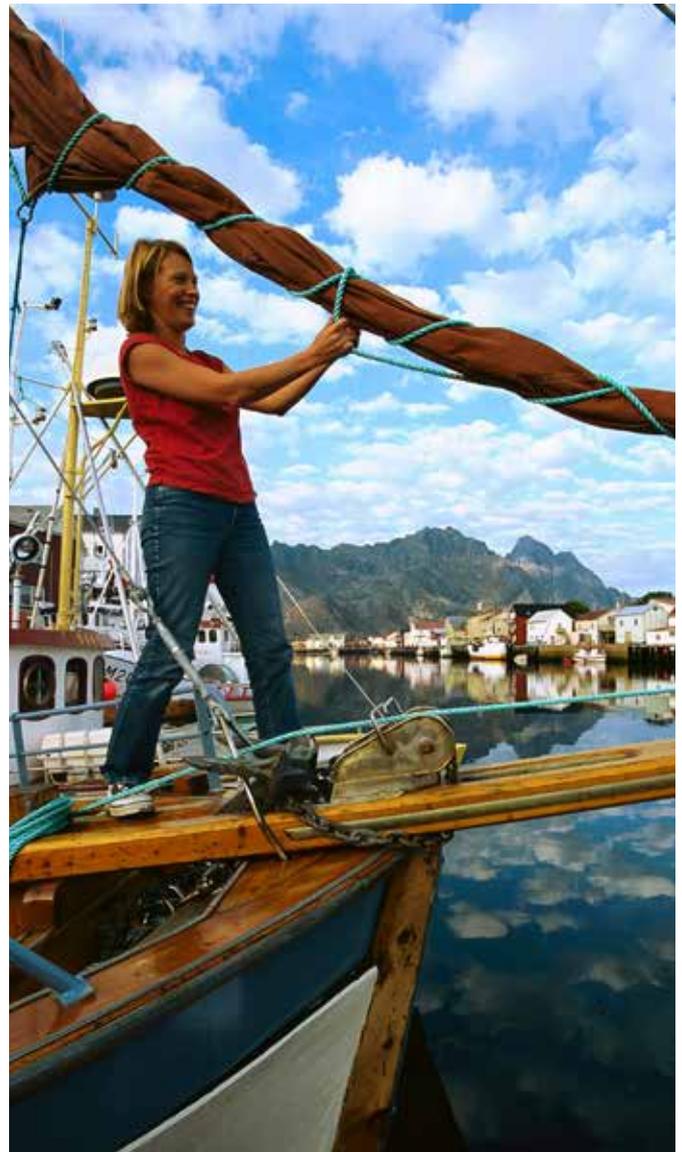


Photograph: CH-Visitnorway.com



**EP** How do you evaluate economic cooperation between Serbia and Norway?

**Arne Sannes Bjørnstad** When we look at some longer period, it can be said that the cooperation is on the rise. Besides Telenor, as the largest Norwegian company present in Serbia, there are other companies such as one customer service center that provides engineering support, then a medical equipment company, and CAMBI which is a well-known company that actually works in the environmental sector and has been present in the region for some time.



Photographs: (upper left) CH-Visitnorway.com; (upper down) Terje Rakke/Nordic life - Visitnorway.com; (bottom) Foap - Visitnorway.com

**Serbian citizens were able to feel the positive changes that were a direct consequence of our cooperation with government institutions as there was an improvement in the services they provide.**



I would like to emphasize that more and more Norwegian companies turn to our embassy for information, and sometimes also regarding investment advice. When I call them to inquire why they haven't yet made a decision to open a representative office in Serbia or why they gave up, I always get very similar answers. Primarily, there is a fact that Serbia is not a member of the European Union, which means that Norwegian companies are not familiar with the legislation and this significantly makes their business in your country difficult. Business in Serbia poses a risk to them. Also, the public procurement system is not sufficiently transparent. Many countries have a public procurement portal, and once Serbia gets such a portal, things will change. The financial market is not sufficiently developed here, even though you have great potential. You need to have more competition on the market. I should note that most of our companies cooperate with Norwegian, British and American banks that do not operate here because they find the market small, which leads to the fact that companies do not want to come either.

Interview by: Nevena Djukic



# WE OUTLINE AND DESIGN TOMORROW'S SOCIETY

**A** Denmark-based, international multi-disciplinary consulting company – [NIRAS](#) is founded in 1956. Today, our growing NIRAS Group team has more than 2,300 dedicated professionals, contributing with their signature advice and innovative solutions to global progress in various sectors such as construction, infrastructure, public utilities, environment, energy, planning, socioeconomics, management, IT and development consulting.

Our headquarters is in Denmark and our offices are based throughout Scandinavia, the United Kingdom, Germany, Eastern and South-Eastern Europe giving us the diversity, versatility and variety of experience key to reliable, realistic and sustainable solutions and advice to our clients. NIRAS works to understand tomorrow so our clients can benefit from it today.

## Sustainable Solutions to Greatest Societal Challenges

[NIRAS International Consulting](#) is a part of NIRAS family of companies with more than 40 years of international experience in project management, acquired systematically in more than 100 countries around the globe.

**We fully incorporate the Ten Principles of the UN Global Compact in the areas of human rights, labour, environment and anti-corruption, making them an integral part of our strategies, policies and procedures**

We are focused on implementing donor-funded technical assistance projects and provide reliable, hands-on support to our clients in comprehensive project management and professional services during the entire project cycle. With a diverse group of experts in our international teams, we are ready to provide sustainable solutions to even the greatest societal challenges.

Our experts are ready to support faster and sustainable international development with their signature, high-quality consulting capabilities, ranging from project design to project implementation and, finally, project evaluation.

# Real Progress and Positive Change

**NIRAS International Consulting** is today one of the biggest development consultancy companies in the world, with a network of companies and branch offices in more than 20 countries. We take particular pride in our project portfolio with more than 1000 projects implemented in more than 70 countries over the last five years alone, and the concrete progress and positive change we have enabled together with our clients.

Our offices in Finland, Norway, UK, Denmark, Sweden, Poland, Germany and Serbia house our core team of 300 full-time employees, supported by more than 800 top-notch experts working on development projects, and more than 14,500 short-term experts engaged in international development projects.

NIRAS is actively contributing to faster development of Eastern and South-Eastern Europe, Africa, Asia and Latin America in a variety of sectors. Our portfolio of clients includes: European Commission, European Investment Bank, EBRD, KfW and GIZ (Germany), Danida (Denmark), the Ministry for Foreign Affairs of Finland, Sida (Sweden), SDC (Switzerland), AFD (France), AusAid (Australia), NORAD (Norway), DFID (UK), USAID (USA), the Nordic Development Fund, African Development Bank (AfDB), the Asian Development Bank, various UN organizations and the World Bank.

# Sustainable Global Development and NIRAS

NIRAS is a company fully committed to the principles of United Nations Global Compact, the world's largest corporate social responsibility initiative, with stakeholders in over 170 countries worldwide. We fully incorporate the Ten Principles of the UN Global Compact in the areas of human rights, labour, environment and anti-corruption, making them an integral part of our strategies, policies and procedures.

Based on our international presence, NIRAS promotes and lives the culture of integrity and social responsibility,

proving our concern and responsibility for the wellbeing and progress of humanity and our planet.

As a socially and environmentally conscious company we also support UN goals, such as the Millenium Development Goals (MDGs) and Sustainable Development Goals (SDGs). NIRAS have institutionalised the SDG framework in the mind set and identity of our organization including the following:

- Integrated the Sustainable Development Goals (SDG) to our overall business strategy;
- Integrated M&E system for all of our new projects and programs which includes 100 Global Sustainable Development Goals indicators;
- Monitored our performance against key performance indicators and sustainable development goals;
- Established in-house cross-functional sustainability teams and task forces for each of the technical areas we provide services;
- Established a Sustainability Committee at NIRAS management / board level
- Identified core NIRAS International Consulting Sustainable Development Goals (5, 6, 8, 17, etc.)
- Committed additional internal resources to improve our contribution to Sustainable Development Goals where we are less present (namely 11 and 14)
- Committed to increase on SDG 7 as we venture into wind farming market and committed ourselves to measure our improvement against the respective indicators

NIRAS is a committed Sustainable Development Goals supporter, with a desire to make real and positive contribution towards a more sustainable world and provides each of our employees an opportunity and space to make real, positive change.





Jelena  
Stamenovic  
NIRAS Country  
Director

Our Project Portfolio in Serbia includes the following projects:

### SUPPORT TO THE DEVELOPMENT OF SOCIAL WELFARE REGULATORY MECHANISMS

NIRAS intends to contribute to capacity building and improvement of social protection mechanisms in Serbia with a focus on: social protection services in the community, dropping out from the education system and social entrepreneurship. The main beneficiary of the Project is the Ministry of Labour, Employment, Veteran and Social Affairs. The project supports capacity building and piloting innovative social protection instruments through the introduction of new regulatory mechanisms, as well as through the development of the Social Protection Development Strategy.

The European Union provides a contribution of 5.5 million euros to our country in the field of social protection through a grant scheme which covers 30 grant beneficiaries including local governments, civil society organizations, relevant institutions, etc. This Project provides support in the implementation of the grant scheme. The project contributes to the smart, sustainable and inclusive development of Serbia through the strengthening of social protection, cohesion, inclusion and economy, in line with the goals set by the Europe 2020 Strategy.

**Funding** The program is funded by the European Union through IPA funds in the period from 2017 to 2019.

### RURAL AND REGIONAL DEVELOPMENT SUPPORT TO SERBIA – THE FIRST PHASE

RRDS is an integral part of the support by the Government of Switzerland to establish good governance in the Republic of Serbia. The overall objective is to support local governments access additional financial resources to deliver on their competences; promote decision taking at local level on investment priorities (within national priority sectors agreed with central government) and lead to the provision of more quality services to citizens and the private sector.

**Expected Outcomes** RRDS interventions are expected to yield three specific outcomes:

- The Ministry of Agriculture and Environmental Protection, Ministry of Economy, Public Policy Secretariat, SDA, SCTM, LGUs and other relevant institutions share and drive a common vision of rural and regional development based on the concept of functional spaces and promoting bottom up innovation; Parliament, Ministries, State Agencies approve new regulatory framework, strategies, programmes and action plans reflecting the new vision.
- At least three combined regional and rural development initiatives inspired by the new vision demonstrate country wide the feasibility and usefulness of the functional spaces approach while fulfilling EU funding criteria and increasing Serbia's EU funding absorption capacity.
- Initiatives and Actions supported within outcome 2 are expected to originate from the two targeted regions: region 1 overlapping with Sremski and Macvanski administrative districts and region 2 with Kolubarski and Sumadijski administrative districts. In addition to technical assistance, project also includes 1,620,000 CHF fiduciary funding to support development measures within the selected project regions and the pilot initiatives.
- The models of regional and rural development inspire policy makers, and LG stakeholders to apply for EU regional and rural development pre accession funding to (co-)fund their own initiatives.

**Funding** Overall budget is 3,699,700CHF, out of which 1,620,000CHF is allocated for financing of rural-regional initiatives.

## EDUCATION TO EMPLOYMENT

From Education to Employment (E2E) is a Swiss and Serbian governments' partnership program designed to improve employability of young people in Serbia. E2E Program supports evidence-based development of youth employment policies in Serbia and facilitates employment and learning opportunities for young people in Serbia.

Program supports young unemployed people in Serbia to find a decent job faster, by creating work-based learning programs and opportunities where young people can learn skills actually required on the job market. E2E builds alliances between public, civil and private sector involved in youth employment to create a municipal-level support system for faster employment of young people.

Together with program national partners (Ministries in the Government of Serbia and relevant state institutions such as National Employment Service and Serbian Chamber of Commerce and Industry) and local partners in five pilot communities, E2E identifies the most successful cooperation models between the national institutions, municipal administration, education institutions, businesses and local community for sustainable and inclusive youth employment.

**Program Duration** E2E was launched in 2015, and we are expected to be active until the end of 2019.

**Funding** E2E has a total budget of 15.3 million Swiss Francs. The Swiss Government contributed with CHF 8 million, while Serbian Government contributed with additional CHF 7.3 million.



# NIRAS GLOBAL PRESENCE

## NIRAS office in Serbia

NIRAS has a unique, 15 years-long presence in Serbia. This allows us to support our clients relying on deep knowledge of the local social, political and economic context and thorough understanding of both the current situation and key challenges. NIRAS office in Serbia consisting of 25 committed professionals has extensive, unparalleled experience with implementation of technical assistance projects in different Western Balkan countries and prides itself as one of the key contributors to social and economic change.

This is our headquarters for South Eastern Europe and base of NIRAS operations in this dynamic region. Strong local presence allows our key experts to start contributing to project development long before the respective project office is established, and receive the support necessary for a successful project launch.

Thanks to our mix of permanent staff and a wide network of associated experts, our office in Serbia is able to offer our clients both international and local expertise in project development ensuring long-term sustainable solutions and a real and positive project impact.





This map gives a clear insight into the scale of operations of NIRAS around the globe

The number in the blue circle denotes a set of projects that the experts of NIRAS have implemented or are currently being implemented for each individual country.



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## Commitment to Excellence and Professionalism

NIRAS clients can benefit from [NIRAS Young Professional Program \(NYPA\)](#), our unique training and personal development scheme, initiated to foster cooperation and experience and knowhow exchange across our offices. This program allows NIRAS to grow faster as a learning organization and build up its human resources in a sustainable manner, while empowering our team members with valuable international experience.

Our second generation of the NIRAS Young Professional Academy started training in 2017, and our NYPA alumni, deployed in NIRAS offices world-wide, already support our clients with their knowledge in tendering, project management and consulting – which are the essentials of the NIRAS International Consulting. ■



**Boban Joksic**, The BBD Group manager

## IF ANYTHING, SLUDGE IS A RESOURCE

**O**n our path to the European Union, we are bound to adopt a number of laws, among which are regulations related to the treatment of all wastewater and wastewater sludge. Despite the certain opinion which can be heard in our country that the purification of wastewaters isn't really a necessity, that is backed up by the conviction that a higher concentration of pollution flows into Serbia by the Danube than the one which flows from our country the same way, the projects for the construction of a wastewater treatment systems are in the pipeline. However, sludge remaining after water treatment is escaping the proper attention of the experts and the decision makers. They generally think sludge is a problem that should be somehow dealt with and most often that dealing involves sludge disposal on landfills, which is soon going to be a forbidden technique once we have our laws harmonized with the EU



Sve fotografije: Bosko Ciglic

Water Framework Directive. In order to manage this type of problem in a simple way, there is a plan to burn sludge, which is a costly and partial solution. Yet sludge is actually a huge resource if managed in an adequate way.

The technology that allows for a multiple use of water treatment residuals is available in our country through the BBD Group that is representative of the Norwegian company CAMBI, the world leader in the treatment of sludge from wastewater and organic waste. The BBD Group manager Boban Joksic says that capitals such as Washington, Beijing, London, Athens, and Oslo have chosen CAMBI's sludge treatment plants. Instead of piling up significant costs and thanks to their decision, these cities have been saving money and energy and benefiting from their energy efficient facilities.

- CAMBI has a philosophy: each problem holds a hidden solution. Thus, the enormous amount of sludge that remains after wastewater treatment and whose transport and disposal require huge resources has inspired thinking on how to use it. Existing technologies were simply no longer sufficient. Legal obligations have changed so the directives prohibited the disposal of sludge containing pathogenic organisms. In CAMBI, they have invented a way to use the biological activity of the sludge to the fullest and thus they have come up with a technology known as thermal hydrolysis. This process has enabled obtaining high-quality biogas in the procedure of sludge treatment

## WHAT EXACTLY IS THERMAL HYDROLYSIS

Thermal hydrolysis stands for the thermal treatment of a certain material at high temperature and under high pressure. In other words, the material (sludge) is treated with steam at 160 ° C for a certain amount of time in order to cut the cellular structure. The treated material that way has different characteristics that allow significant savings both at the investment and exploitation stage.

The sludge upon treatment with thermal hydrolysis undergoes digestion with a significantly higher concentration of dry matter, which cannot be achieved in the case of classical digestion. With this significant savings are obtained in the volume of the digester, and this represents a great financial saving in the investment phase. The less water in the processing process, the more energy is extracted from the material. In addition, the digestion itself is more stable, and in the end, it is easier to dehydrate or to take the water out of the material.

In order to make the investment in thermal hydrolysis justified, it is necessary to make a detailed analysis, offer the solution and its sustainability. The return on investment has to be calculated within an average period of 3 to 7 years, while the lifespan of the plant is from 20 to 25 years with the possibility of being longer than this time span (depending on the quality of the plant maintenance).

In Serbia, thermal hydrolysis technology can be applied only in several major cities, since the construction of such a facility makes sense in inhabited places with a population of more than 100,000 or in cases of the construction of regional centers for the treatment of sludge and organic waste.



as well as a significantly better way of use of the residuals for agricultural purposes – explains the director of the BBD Group, stating the fact that the sludge treatment also results in huge savings.

If we know that sludge burning costs an average of 80 to 100 euros per ton and that Belgrade will have it in a raw condition roughly 100,000 tons a year, it is clear that we are not talking about petty savings.

According to estimates, the production of biogas in the process of thermal hydrolysis, which is a pre-treatment to anaerobic digestion, increases up to 30–50%, and the dry remainder whose structure is changed as a result of this process appears to be a first-class fertilizer. For example, in the UK this technology is employed for the treatment of

**If we know that sludge burning costs an average of 80 to 100 euros per ton and that Belgrade will have it in a raw condition roughly 100,000 tons a year, it is clear that we are not talking about petty savings.**

up to 40 percent of the sludge, and that resulted in a new industrial sector.

– After the legislation change, the British authorities set up contracts with companies for the delivery of the fertilizer made in the thermal hydrolysis to farmers and those companies sell it at a price which is a half of the artificial fertilizer’s price. In order to take into account all the possibilities of sludge exploiting, which is still out of our reach, we need to learn a lot about sludge, but first we need to adopt a new approach – says Boban Joksic and informs us that sludge contains a plenty of phosphates and natural phosphorus, and the world is in short of these elements. Using this fertilizer in agriculture, natural nutrients are going back into the soil which becomes ameliorated. The sludge serves as a multivitamin supplement for the soil which was impoverished by nitrogen compounds. It also acts as the best ally in organic production because it doesn’t impede but it stimulates the natural balance necessary for healthy crop farming.

Asked why it is best to use sludge in farming, Boban Joksic claims that the price is the lowest and the level of exploitation is the greatest when we decide to use the remains of wastewater treatment at farms. Any other procedure and an additional process of sludge treatment, starting from disposal at landfills, storage, burning to drying, are considerably more expensive.

– Today we mostly burn and dry sludge in our systems. We took this technology from the Germans who had to



BBD Group was founded in 2011 and their activities include the application of technologies for wastewater treatment, drinking water, and renewable energy sources. In a narrow market niche that relates to the treatment of sludge from wastewater and treatment of organic waste and biomass, this company represents the Norwegian company CAMBI.

–Our business is divided into four areas: designing and consulting where we are trying to expand knowledge and bring new technologies to our country, but I have to emphasize that we do business throughout the Balkans and throughout Europe. The idea is to make a two-way street – to bring modern technology to this region and to produce equipment according to European standards and export it to the European market. This is the second area in which we are successful. We produce process equipment for water treatment in partnership with the company “MIP Process Equipment” from Curpija and we export it all over the EU – says Boban Joksic.

The BBD Group provides engineering and marketing services and performs sales and post-sales activities while “MIP Process Equipment” deals with production activities. The third area is water treatment where, with the help of foreign partners, they work on projects in the Balkans market, and the fourth area of business is energy. They are mainly focused on the treatment of sludge from wastewater and the production of biogas. There is a possibility of expanding waste and land remediation activities since there are plenty of polluted soil and landfills in Serbia.

process the sludge this way because they had a high concentration of pollutants due to the industrial development. The sludge in our country is not considerably polluted with heavy metals and other pollutants in a way that we would have to burn it. Today, even the Germans tap into some other solutions. On the other hand, they have developed a water purification system by degrees, and we are in a position to skip a few steps – says Boban, pointing out that it is necessary to have knowledge on how to manage sludge just like any other resource. For that matter, one and universal solution doesn't exist, and it is necessary to come up with a combination of solutions. Since there is a season for fertilization in farming, out of season sludge can be stored

are not able to plan what to do with the remains of the wastewater treatment, insists the owner of BBD Group and stresses that water must be purified what so ever, but the choice of technology depends on our vision and information about available choices. In conventional technology, the wastewater treatment process consists of sedimentation, biological treatment, secondary precipitation and other treatment, including even tertiary treatment which involves the removal of phosphorus and nitrogen, and that one should be our legal obligation for agglomerations bigger than 20,000 inhabitants. However, in the first phase neither Belgrade or Nis will have it. In any case, large quantities of sludge remain behind the water treatment.



and used at urban green spaces, parks, along with the highways, in the forests and elsewhere. In order to be able to use sludge this way it is necessary to adopt a national strategy for the sludge treatment. The drafts were made but we haven't come a long way.

– There are wastewater treatment plants in Subotica, Sombor and Kragujevac, and a few more are under construction. In Serbia, roughly 6% of wastewater is now being treated. It's a fact that 50–60% of the cost of such a facil-

ity goes to the treatment of sludge, whether it involves a waste landfill, burning or other solution. The problem is that enough attention hasn't been paid during the planning of the plant to what will be done with this by-product of water treatment. Yet, you have it in huge quantities. Thus, it is necessary for people to be educated about it and to allow for other experience and examples from the countries in our region to be heard. In the era of the Internet and the availability of diverse knowledge, it is intolerable that we

We've come to the point that it is necessary to stabilize that sludge. In small plants, you can only dehydrate it, then transport it to the appropriate place for disposal or you can treat it and extract biogas from it. So, the sludge itself has some potential. If you get biogas from it, you will reduce operating costs, and with the use of modern technology, this biogas will provide you with the electricity needed for operation of the water treatment plant itself, or you will additionally compress it and use biogas for running city public transport, as they do in Oslo – says Boban and adds that with the technology of thermal hydrolysis, more biogas is obtained, as much as 30 to 70 percent, depending on the structure of the sludge. Cogeneration is very important because it generates heat and electricity which goes back into the treatment procedure. In this way, energy recirculation is carried out, and CAMBI has a motto in its name which says exactly the same thing: recycling energy.

Regional sludge treatment centers such as those in the UK might be a solution for Serbia. This alternative significantly reduces investments and lead to significant savings in further treatment of sludge, taking into account the necessary transport costs.

When it comes to wastewater treatment, our decision-makers are often not so aware of the problems and possibilities for its solution. They know even less about options for reducing costs by using thermal hydrolysis technology, says Boban Joksic.

– The local government officials in Nis had a proactive approach to solving the problem of wastewater, they have

learned and taken steps which are more cost-effective in a long run. In Subotica, however, there is another kind of problem. Even though they have young, professional people to maintain the plant, they do not have the necessary resources which result in deterioration of the plant.

The BBD Group had a number of activities in order to provide information and education about the modern way of wastewater treatment. The choice of technology for the treatment of water and sludge affects the cost of plant construction, operating costs, ongoing maintenance, but also the price of water in the future. The director of the BBD Group informs on how much water costs are in other countries.

– One cubic metre of water in Budva costs 2.5 euros in the concession, and in Berlin 5 euros. In our country, water is squandered without a second thought, because the price of water is not yet at the level of commercial (market) conditions that will have to change after the construction of

**The choice of technology  
for the treatment of water  
and sludge affects the cost**

**of plant construction,**

**operating costs, ongoing maintenance,**

**but also the price of water in the future**



## WHAT CAN WE LEARN FROM NORWEGIAN COMPANIES

Norway is an innovative country that has invested a lot of time and resources to develop a technology that protects the environment. Their companies have a vast experience in preserving resources and their rational use and can help us with their knowledge and experience in order to more easily adopt the changes that are inevitable due to the harmonization of our laws with the EU legislation.

– Norwegians are not disrespectful when it comes to the environment – says Boban Joksic – They have collective awareness. They share the common interest, and it is clearly defined, and everyone is trying to achieve it. Although they are way ahead of us, that does not mean that we cannot catch them up. However, in order to achieve this, we must take steps. As soon as we make the first changes, the difference between them and us will not be that drastic. Unfortunately, this first step hasn't been made yet.

Boban also believes that we cannot rely on our state to do everything for us and for our well-being. The Ministry sets the goal and framework, but if citizens do not accept the idea of environmental protection, all efforts of the Ministry will be in vain.

– That is why citizens are important because the success depends on their participation, but this

success is at the same time our personal benefit. It is important that we know that education never ends, it is a constant process that should be worked on. Each of us must understand that we are responsible. Although industry today isn't at the level we once had, the waste is there, hanging around in our environment, in the soil, water, and food. You know, we often emphasize that we have potential in the water resource. But that potential is not eternal, and in many places, it is very polluted. You can no longer just take water from the well and satisfy your thirst.

If we know that sludge burning costs an average of 80 to 100 euros per ton and that Belgrade will have it in a raw condition roughly 100,000 tons a year, it is clear that we are not talking about petty savings, if we use the same sludge for the production of biogas and quality fertilizer

The choice of water and sludge treatment technology influences the cost of plant construction, operating costs, ongoing maintenance, but also at the price of water in the future

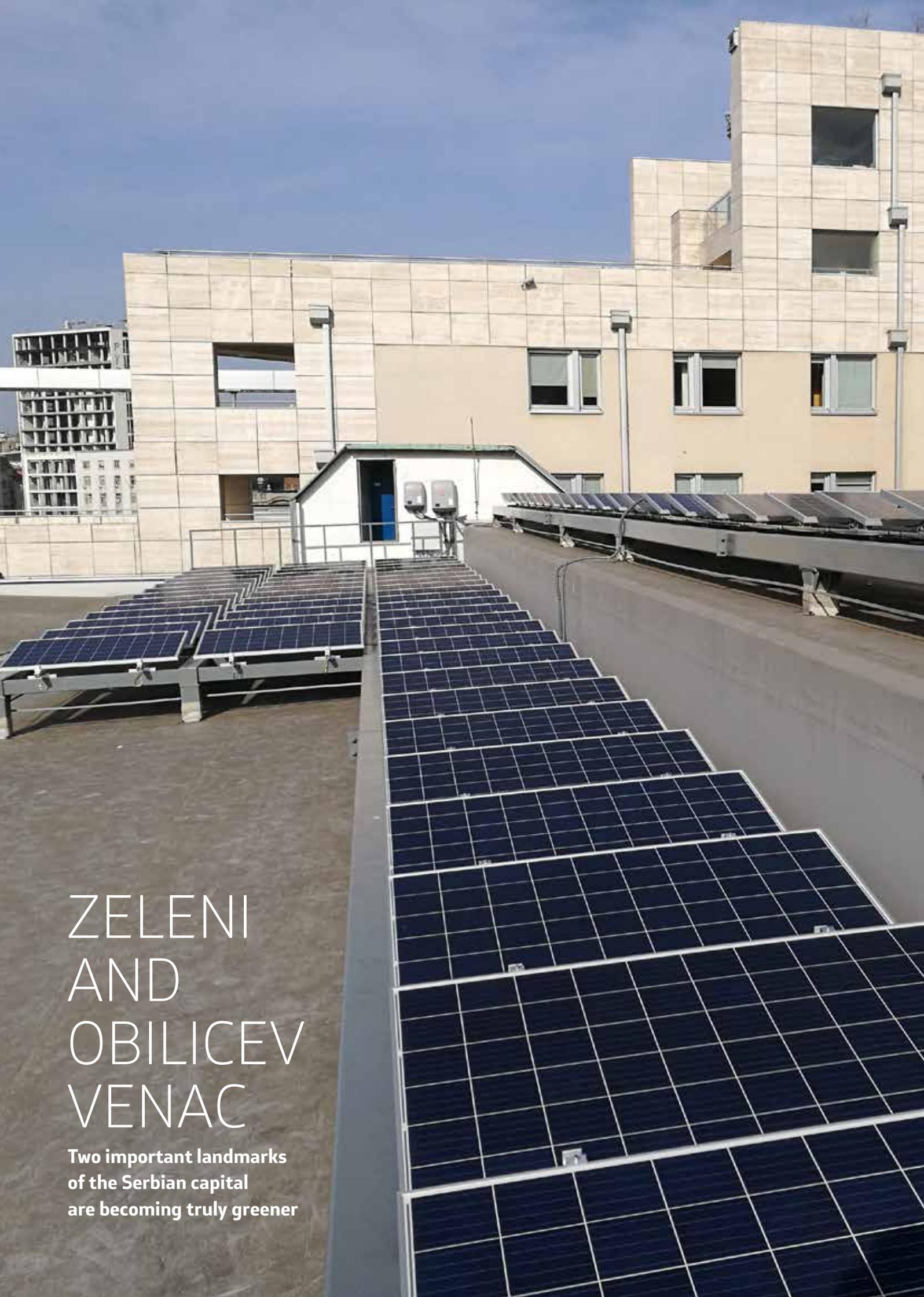
According to estimates, the production of biogas in the process of thermal hydrolysis increases up to 30–50%, while the dry remainder after this process appears to be a first-class fertilizer



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the wastewater plant. If water today costs 50 dinars, don't have any doubts that it will cost twice as much when we need to purify it. The price will have to change because if you discharge something today in the Danube without treatment, tomorrow you will have to do water treatment. Therefore, the price must change. Still, the benefits are still great. You will have healthier food, water and the general health of the nation.

Interview by: Tamara Zjacic



# ZELENI AND OBILICEV VENAC

Two important landmarks  
of the Serbian capital  
are becoming truly greener

It is expected in the future that the first green building rises on the site of the former Beobank building at Zeleni venac. Compared to the rest of multi-story buildings in Belgrade, the planned multifunctional building will have living walls, where diverse vegetation planted in vertical gardens will improve the microclimate in this part of the city. It is also planned to install the rainwater harvesting system, solar panels and wind turbines for electricity production. Only five-minute walk from this future architectural achievement, on the top of Garage “Zeleni Venac”, the project based on the alternative energy production was developed which will improve the quality of life in this neighborhood.

On the top of the public parking garage at 13 Kraljica Natalija Street, 115 polycrystalline solar panels with an aluminum substructure were installed. These photovoltaic modules are expected to have a production of up to 32 thousand kWh annually. The garage will use the produced electricity for its own consumption, which will reduce the network load and the exploitation of fossil fuels, together with zero carbon dioxide emissions. Additionally, the use of completely free and unlimited solar energy will result in cost savings. The solar power plant was built as part of the garage’s refurbishment that has now been modernized with implemented modern lighting technology, while the works were carried out by Termomont Ltd. from Belgrade, as the main contractor and designer of the solar power plant in Zeleni venac, and MT-KOMEX Ltd. from Belgrade,

in the domain of renewable energy sources. Following the world trends, MT-KOMEX employees went through a series of training and specializations in assembly, construction and installation works. In the last period, they participated in numerous projects for the construction of small hydropower plants, gas, and solar power plants. Engineers from MT-KOMEX have been trained and certified in solar power plant construction. So far, the name of this company has appeared in projects for 9 solar power plants with the installed capacity of almost 2.5 MW.

To keep up the pace with modern trends, the company’s management also got involved in activities supporting the introduction of electric vehicles on Serbian roads and application development of charger stations. MT-KOMEX engineers are trained to install chargers, both in smaller residential and business units, as well as in larger buildings with more demanding infrastructure. The results of the strategic partnership with Schneider Electric and ABB, two global leaders in the production of chargers for electric cars, are obvious. MT-KOMEX installed chargers for slow and medium-speed charging in the BMW car showroom, in the head office of ProCredit Bank and at the IKEA department store parking lot. Engineers also used their skilled fingers in setting up the charger in the public garage Obilicev venac in Belgrade, which was the first one in Serbia to offer its users charging of electric vehicles, which was also realized as part of the reconstruction of this garage carried out by the Termomont’s expert team.

Jelena Kozbasic



as a subcontractor. The project was financed funded from the City budget for the needs of the public utility Parking Service.

In the twenty-first century, when climate change is hovering threateningly in the air in the form of harmful gases, it is very important to turn to clean, renewable energy resources. It is commendable when steps in this direction are made by a public company. The associates in achieving their goal and socially responsible business practices they will always find in MT-KOMEX company. This Belgrade-based company with decades of experience in the field of mechanical engineering and welding has enriched its contracting activity, over the past seven years, with practice

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## The treasures of amino acids discovered in wild apple's elixir

**The evidence of medicinal properties of the forgotten tree species which is almost completely extinct in Europe was attributed, as it often happens, to a mere coincidence. When Zivota Nikolic in 2012 on his visit to his hometown near Vrnjacka Banja tried unsuccessfully to combat a flu virus with various over-the-counter medication in order to be able to travel back to America, where he lived at the time, he received by chance a recommendation to also try a homemade wild apple "vinegar". He recovered in only a few hours and embarked on an airplane determined to do everything possible to make the product of this neglected and inedible fruit recognized and available as a universal "emergency aid" in our country and around the world.**

**H**e did not forget to take with him the "vinegar" sample that restored his strength. Upon his return to his home in Texas, Zivota sent a small amount of this preparation to a laboratory analysis in Dallas. They promptly called him and asked him to explain the composition of this liquid. They could not believe that, apart from the sugar that accelerates fermentation, nothing has been added to the preparation considering that a large number of amino acids in a free state cannot be obtained without the addition of other substances. Zivota was no less surprised by this discovery. He realized that actually, it was not a vinegar at all, but an elixir. That aroused his curiosity but also entrepreneurial spirit. Quite enough for the first step.

He was already back in Serbia in 2013 in order to buy out wild apples and make the healing elixir that he would sell throughout America. The year was exceptionally fruitful and very soon a word spread out



## THE RECOMMENDATION IS THE BEST ADVERTISEMENT

The wild Apple elixir helps reduce swelling in injuries and eliminates accompanying pain as well as other chronic pains, but it can also be used preventively. Thanks to the proven presence of many amino acids, this remedy prevents the blood pressure and cholesterol growth in the blood, and it also works as an anesthetic in case of a toothache, so it is enough to hold one teaspoon of vinegar in the mouth in order to make the pain disappear quickly.

- I try everything first on myself. That's why I conducted a small experiment last year. I must say that I do not recommend anyone take such a test because I stopped taking regular therapy of my own accord from 1.9. to 12.17.2017 by taking only wild apple extract and afterward I went to

a doctor's appointment in the United States.

When the biochemical blood test results arrived, the doctor told me that I had never had better results with the conclusion that the prescribed therapy was excellent. I did not tell him that I had not taken it - Zivota recounts with a smile. He is most pleased to hear when people tell him that after the use of his products, they feel enormous relief. Their recommendations are very important, even though it takes a lot of time for them to reach a large number of people.



among fruit picker workers in Vrnjacka Banja area about the “American” and his plan, and in the end, 500 tons of wild apples were processed, and Zivota obtained the first amounts of his elixir and tea.

– In our product made from the wild apple, there are 16 amino acids – 8 are essential and 8 are non-essential. We can influence the volume and quantity, so we are able to increase or reduce amino acids according to the needs. The free-form amino acids differ from the amino acids found in proteins precisely because they are not correlated and due to this fact, they work faster and in a different way. They are actually acids for emergency relief because when injuries occur, they get on the scene and accelerate the healing. This is where the value of our product is – says Zivota, emphasizing that the “production” of the preparation is not a short-term nor always a safe job, as it takes 300 days for apple fermentation, and from the moment of picking/harvesting the fruit until obtaining the finished product passes a full year, and currently the amount of fruit exclusively depends on weather conditions and the year’s fertility. Zivota’s goal is to preserve the wild apple as a variety and that weather conditions do not interfere with its cultivation; therefore, he plans to plant seedlings.



## What’s behind the fruit that cannot rot

This apple variety was almost entirely extinct in Germany, Switzerland, and Austria because it is completely useless in the forest – it has no value either as a tree or as a fruit. Only Romanians plant the wild apple. In the Carpathians, where strong winds blow, they afforest the area with this species, because it is the only one that can survive in a harsh climate. Surprisingly, it was preserved as a species in our country. It can be found in Macedonia, Bosnia, Bulgaria. It is not only preserved in our country, but it also doesn’t grow anywhere as much as it does in our country.

It is interesting that the fruit of the wild apple cannot be wormy or rotten because it contains an acid that serves as the natural preservative and also as the natural protection from flies and worms. Although this apple is not edible, sometimes its frozen fruits laying on the ground are a real feast for hungry forest animals.

## SUPPLEMENTS PRESENTED TO INTERNATIONAL SPORTS MEDICINE PROFESSIONALS

**Last April, Zivota participated in the 10th Congress of Sports Medicine organized by the European Federation of Sports Medicine Associations (EFSMA) in Portugal. He wanted to introduce the products that enable fast recovery for athletes after injuries to the professional public, and his arrival to the Congress was supported by our most famous athlete Novak Djokovic.**

**- Unfortunately, the domestic product from our country does not have a great reputation, so I had to apply as an American to draw the experts attention**

Unlike its cultivated relative, the wild apple has between 8 and 10 percent of sugar, and the concentration depends on multiple factors – the year, rainfall, altitude, and others. Precisely because it does not contain a lot of sugar, which would interfere with the process of creation of amino acids, with an abundance of yeast wild apple even continues to “live” in the packaging of Zivota’s supplements. That is why he calls his products the living fluid.

– Wild apple is a self-sustaining species. It contains everything to survive. Hence its remarkable composition and effectiveness. It goes without saying that the wild apple does not need to be sprayed. Simply there is no need for that. On the other hand, we do not see yet the real effect of excessive spraying of domesticated fruit. Perhaps in the next fifty years, we will see the true extent of uncontrolled use of chemicals. I believe that people also do not read the instruction manual when using insecticides and other chemicals, but if you find dead sparrows under the cherry tree that you sprayed with the product purchased in an agricultural pharmacy, it is obvious that the problem is not only in measurement, concentration, and poor handling. I think that such a product should not even be on sale, – Zivota warns and states that we should have more trust in the knowledge that is passed on from generation to generation in comparison to imported products.

Zivota himself was convinced about the power of the home remedy, but he was encouraged to study the amino acids present in the wild apple’s supplements by the results of the analysis carried out in the United States. Thus, he learned that the essential amino acid arginine has 4 nitrogen atoms, while all other acids have one or two, whereas nitrogen is important in case of swelling, as it helps the injury to heal.

– We know that it is best when a medicine is able to reach a damaged tissue through skin, and our products

to my products. If we made our products in Bulgaria or Romania everything would be easier, we would find a distributor faster, and buyers from around the world would have more confidence in the manufacturing and product quality. This is the core of the problem of the placement abroad. Nevertheless, we are making the products here and we will not move the production, because wild apples really do not grow anywhere as much as here - Zivota says and adds that he would like the most if he could boast everywhere in the world with this Serbian product.



### ZIVOTA'S AMERICAN DREAM

At the age of 25, he left Podunavci village where he was born and went abroad. He spent 42 years in the United States. He worked in hotel industry and construction,



his company was the supplier to the US Department of Defense, and a few years ago he returned to his homeland and now lives in Vrnjacka Banja. He devoted his days to studying the properties of wild fruits and the production of preparations used by our famous athletes to eliminate swelling caused by sports injuries. His desire is to plant wild apple plantation this year so that in five, six years he would no longer have to depend on the harvest from the wild, which would mean that he could have fruits every year rather than every three years like he has now.



allow just that – says Zivota and explains that his herbal remedies in form of extracts, elixirs, and tea which he registered as supplements still cannot be bought in pharmacies. In order to find them in pharmacies, it would be necessary to significantly increase their price to cover the costs of distribution and placement. Such a price would automatically prevent the availability of the product to the majority of our population. The purchase is now possible only via the Internet. Zivota says that it is much easier to place these products abroad, and in the upcoming period, most of his extracts in bottles, tea, and elixirs for external use in form of a compress will be available in many countries around the world. Though, the story about wild fruits and herbal remedies does not end here.

Our plan is to get similar medicinal preparations from other wild fruits someday. We would like to make an elixir from wild blueberries, and at the moment, the necessary analyses are carried out abroad because there are no technical possibilities to do this in our country. On the other hand, the previous analysis of the properties and composition of the wild apple's preparations were carried out in the United States, because among other things, over there was easy to find a person who could help. We were given support by Carmen Johnston, the best-known expert in apple cider vinegar, who works as a professor at the Arizona State University, in Phoenix. Two years ago, she studied our wild apple and the results were so inspiring that Carmen decided to seek state funds to finance the study of our wild apple at her university. Last year in August was the last time we spoke, and she has not yet received them.

In any case, I learned a lot from her. Five years ago, from the time when I was first cured of virus with this preparation, my knowledge of the wild apple was extremely scarce, but in the meantime I learned a lot from the real experts, and now I can boast with considerable expertise – Zivota says, pointing out that the biggest support from domestic professional circles he received from Dr. Panajotovic who worked for many years in the Ministry of Health.

Due to his knowledge and practical experience in wild apple's processing, Zivota has a unique opportunity to participate in the development of the scientific study on the properties of this plant and hopes that after the completion of all research, the work will be published in a scientific journal. If he succeeds, he believes that Serbia will position itself high in the scientific community, which would open new horizons.

Prepared by: Tamara Zjadic

**Vladan Vasic**  
the Mayor of Pirot

## The Citizens of Pirot are Proud of their City



40

**V**ladan Vasic was elected three times as the President of the Municipality Pirot, and after the elections in 2016, he became the first Mayor since Pirot was granted the city status, prior to the elections. A significant step forward was made in the construction of infrastructure during his previous presidency of the municipality and citizens of Pirot have got a sports hall, an indoor swimming pool, new factories, and bridges, and the quay and squares have been arranged in a way that is proper for a city that aspires to become a significant tourist destination. The most important to him is the fact that the citizens have become proud of their city.

**EP** Are you impressed by the fact that the citizens of Pirot have shown you their trust for the fourth time and what do you think how you earned their sympathy?

**Vladan Vasic** I have pointed out many times that winning the elections in small towns is a feat, two victories – a huge success, three – incredible, and four – almost impossible. I am grateful to my citizens for believing in me and my team.

**EP** The last “green” news that came from Pirot was about the construction of the plant for secondary separation of waste at Regional landfill. How far have you come with this project?

**Vladan Vasic** We plan to finish with the construction of the plant for secondary separation at Regional sanitary landfill

by the end of 2018. Most of the equipment has already been purchased from our own funds. The construction of hall is ahead of us. Although we mainly rely on municipal budget, we expect that part of the money will come from the available funds. The plant for secondary separation is of great importance for Pirot, primarily because recycling will be commercialized, and the deadline for exploitation of the existing landfill will be considerably extended. Currently, the deadline is mid 2021.

**EP** The schools of Pirot are considered to be the most advanced in the country. Some of them have introduced the use of biomass for heating. Can you tell us something more about this? Is this a feasible way for the entire municipality to heat in this “ecological” way and do you have plans that go in that direction?

**Vladan Vasic** Four schools and one nursery use biomass for heating starting from this winter. The project was implemented thanks to a public-private partnership which according to my knowledge is a pioneering venture in Serbia. About 80 million dinars were invested in the project and the costs of local self-government were minimal. Biomass is a locally available fuel, therefore significantly cheaper than oil fuel. It is estimated that achieved savings will exceed 30 per cent. Healthier environment is something that cannot be expressed in percentages or in money. We should not forget the employment of local

workforce for the preparation of biomass. In the end, the money from the savings remains in our city. Since small boiler rooms have been shut down and with the construction of central power plant “Senjak”, which supplies all the users of district heating, an important precondition has been created for moving to the next stage – which is the use of biomass for heating of the entire city instead of oil fuel. We have begun the development of this project and the feasibility study is currently being developing. The ultimate goal is healthier environment and cheaper heating for all the users.

**EP** You have declared that you want Pirot to become the first “green” city in Serbia. Is that title at your fingertips or you have a competitor in Serbia?

**Vladan Vasic** It is true that we want to become a “green” city, but it is not important for us to be the first. We would prefer to be one of many “green” cities in Serbia, since greater participation will contribute to satisfactory effect. Other municipalities and cities are not seen as competitors but as associates. All positive experiences are welcome, and we are at their disposal for sharing our knowledge. Employees at City Administration contact their colleagues from other cities and municipalities, attend seminars and on some even have the role of a lecturer.

**EP** The first calls were announced for grants from pre-accession funds of European Union for Rural Development (IPARD) primarily intended for investments in equipment and machinery for processing industry and primary production at the beginning of 2018. Given the fact that domestic farmers neither have the information on available resources and nor have the knowledge for the preparation of the projects at the local level, do you provide them with some sort of system assistance?

**Vladan Vasic** In Pirot region there aren't many farmers who meet conditions for IPARD, thus local self-government focuses more on the program of support measures for agriculture and rural development financed from the city budget. The state envisaged that training and technical assistance for applying for IPARD funds is provided by Regional Agricultural Advisory Service (RAAS) which operates within the Ministry of Agriculture whose advisors have already attended seminars. Professional staff at Department for Agriculture in the City Administration is acquainted with the conditions for the use of funds for IPARD in order to provide farmers with basic information on the program and also to harmonize the local incentive program with it, which is one of the conditions envisaged by the Law on incentives in agriculture, so as to get a positive opinion from the Ministry of Agriculture. Also, the



Tourists quickly grow fond of the citizens of Pirot with their **specific dialect, smile and hospitality**



Vladan Vasic was born in Pirot in 1971. In his hometown he finished primary and secondary school, and in Nis he graduated at the Faculty of Electronic Engineering. He worked as a system engineer in the computer centre of the factory "Prvi Maj", and from 2000 he was a councillor in the Pirot Assembly. He was first elected for the President of the Municipality fifteen years ago, and today as the Mayor he influences the development of his city.

Department for Agriculture in the City Administration organizes educations in cooperation with the RAAS advisors where they talk about IPARD funds among other things.

**EP** Last year, Pirot hosted two significant events for environmental protection, Climathon and Scientific Conference on water and Solid and Hazardous Waste Management. What is your attitude on their role in informing the citizens about the importance of tackling climate change? Do you think that your fellow citizens have sufficiently developed awareness of the need for the environmental protection and how does the city plan to contribute to more active participation of the citizens in solving environmental challenges in the future?

**Vladan Vasic** These two important events held in Pirot represent a acknowledge to our city. They have greatly contributed to informing the citizens of Pirot. Climathon 10 is the first event of this kind that was held outside Belgrade. The Serbian capital was the host to the previous 9 Climathons. The event was held as the part of last year's Researchers' Night. There were topics like Chapter 27, renewable energy sources, climate change and the influence of small hydropower plants on flora and fauna. Scientific conference on water, solid and hazardous waste management is one of the most important scientific meetings of this kind in Serbia. About 200 experts from Serbia and abroad met in Pirot. The goal of the event was the exchange of knowledge and experience in the field of the environmental protection and primarily of water as one of the most important natural resources. The citizens of Pirot had a chance not only to listen but also to participate in these two events which greatly contributed to raising awareness. In general, "ecological" awareness is not at the necessary level neither in Pirot nor in entire Serbia. The cooperation of local and republic institutions in the field of citizens' education is necessary, as well as more strict

penal policy for all those who pollute the environment. Through cooperation and financing of the projects of non-governmental organizations that deal with ecology, citizens are involved in the conservation of the environment directly or indirectly every year.

**EP** How does Pirot attract tourists? What would you show your guests?

**Vladan Vasic** Pirot attracts tourists with gastronomy, nature and people. Thanks to a huge number of local specialists, Pirot received recognition as European touristic destination of exceptional importance for gastronomy. As a fan of Pirot, I would show my guests numerous springs, rivers, waterfalls, the peaks of Stara Planina, pedestrian and bicycle paths. Among other things, Pirot is attractive for tourists due to the ideal conditions for hunting and fishing. There are more and more tourists in Pirot – the number of nights in Pirot in 2016 was 28 thousand and in 2017 it rose to 42 thousand. Tourist quickly grow fond of the citizens of Pirot with their specific dialect, smile and hospitality.

**EP** What are your plans for the development of the city in 2018 and what will be the main focus of the city administration?

**Vladan Vasic** Further plans are to continue with the investment in infrastructure in all parts of the city and to create even more favourable economic environment for business and more comfortable environment for the people with adequate sport, cultural and tourist attractions. We are trying to develop favourable climate for the development of IT sector in the city. Communal infrastructure is also important to us so we are going to put priority on wastewater treatment in order to become an environmentally advanced city. Investing in young people and taking care of each individual in Pirot is of greatest importance.

Interview by: Jelena Kozbasic



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# CEEFOR: ACHIEVING ENERGY EFFICIENCY THROUGH THE DEVELOPMENT OF ENERGY AUDITS

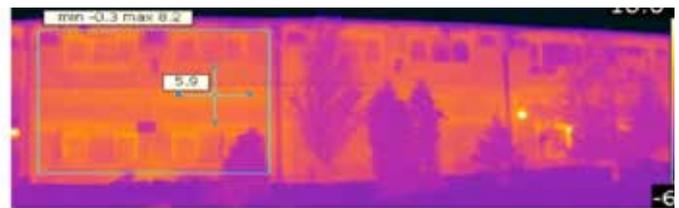
**E**nergy efficiency is the sum of planned and implemented measures which have a goal to use the minimum amount of needed energy while preserving the level of comfort and production rate. The company – **CEEFOR** – *Center for Energy Efficiency and Sustainable Development* has provided more rational energy consumption for many companies by performing energy audits for their industrial plants.

Some well-known products come from these companies: some of them refresh you when celebrating Patron Saints day (*Knjaz Milos*), make your life sweeter (*Stark* and *Swisslion-Takovo*) and make your lunch more tasty and richer with proteins (*Neoplanta*). Associate in the field of energy saving for these companies was exactly **CEEFOR**. Its headquarters in Belgrade and was founded in 2010.

With successfully accomplished assignments in the field of energy technologies, the *Center for Energy Efficiency and Sustainable Development* has reduced not only the costs for its clients but also the negative impact of harmful com-

ponents that cause the greenhouse effect, which made this company one of the leading companies that strive for social responsibility.

The **CEEFOR** team consists of 20 experts with many years of experience in the field of renewable energy and energy efficiency: mechanical, electrical and civil engineers,



**Thermovision analysis of energy losses**

technology engineers, architects, traffic and fire protection engineers, economic and financial experts and translators.

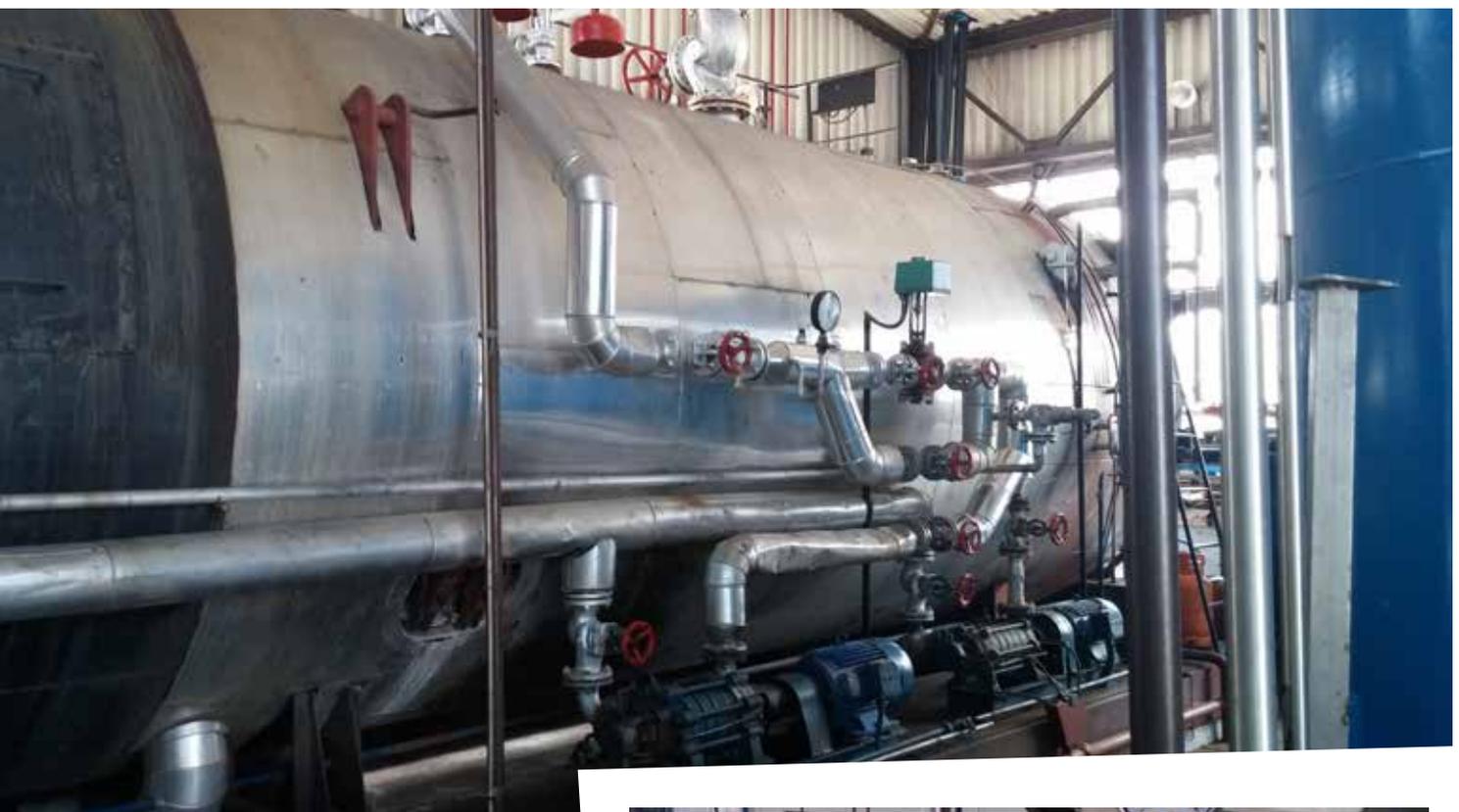
The experts of *Center for Energy Efficiency and Sustainable Development* can also provide your company with a direct benefit through development of energy audits, feasibility studies, as well as with preparation of full project documentation and economic-financial analysis, by implementing technical control and construction supervision, as well as the quality evaluation of applied technology. The company offers consulting and engineering services by obtaining opinions, conditions, approvals, and permissions, as well as contacts with equipment suppliers.

The energy efficient solutions, implemented by the group of **CEEFOR** experts, include two solar power plants in Kladovo with the installed capacity of 2 MW, and a solar power plant on the IKEA Department Store building in Belgrade. The team of engineers also worked on the elaboration of the investment-technical documentation for a solar power plant with a total power of 9.9 MW for the Public Enterprise Elektroprivreda Srbije.

The Petroleum Industry of Serbia also engaged **CEEFOR** engineers, and one of the projects that took place between 2013 and 2015 for the mentioned oil company was designing, licensing and organization of technical inspection for the cogeneration and gas power plants in the territory of the municipalities of Kanjiža, Srbobran, and Veliko Gradiste.

The field of work of *Center for Energy Efficiency and Sustainable Development* is not solely related to power plants. *The Umka cardboard factory* is also on their client list for which they made a pre-feasibility study of a steam turbine power plant.

**CEEFOR** is also active in the field of eco-mobility. Through consulting service activities, technical and financial analysis and designing and communicating with manufacturers of necessary equipment, several preliminary designs were developed for setting up charger stations for electric vehicles. The result of these projects was the installation of chargers at several locations in Belgrade – at the BMW showroom in Cukarica, at the public garage in Obilicev Venac, at the Pro-Credit Bank branch and other locations as well. ■



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# Nature in the Service of Agriculture

**In the interview with Elvir Burazerovic, General Manager of NGO ORCA, we found out what is necessary to do in order to make our agriculture sustainable, as well as what ORCA is undertaking in that sector and what are the consequences on nature if we do not change our way of managing agricultural holdings**



**Elvir Burazerovic**, The General Manager of NGO ORCA

**T**he aim of sustainable agriculture is to reduce negative anthropogenic environmental impacts by efficient use, preservation and improvement of the quality of natural resources since agriculture largely depends on the services provided by ecosystems. Preserved natural resources and improved quality of the environment in sustainable production systems are at service not only for present but also for future generations. Sustainable agricultural production implies that farmers are actively involved in the decision-making process and have concrete benefits from economic development, good working conditions and good prices for their agricultural products.

Traditional agricultural production is a kind of sustainable agriculture and it was widely represented not only in Serbia but also in the greater part of the Western Balkans for a long time. Then, the use of mechanization, fertilizers, pesti-



cides, antibiotics was introduced, so that more food could be produced in less time. The quality of food produced in this way is extremely questioned, and the process of intensive agricultural production itself pollutes land, water, and air.

– Traditional agricultural production has held out in some parts of Serbia, especially when it comes to livestock breeding. On the other hand, many farmers slowly turn to organic or other forms of sustainable production, as the market for their products is gradually being created. The

## **SUSTAINABLE AGRICULTURE HELPS FIGHT CLIMATE CHANGE**

Sustainable agriculture contributes to mitigation of climate change effects. Practices that affect climate change including the intensive use of artificial fertilizers, intensive livestock production, extensive use of pesticides and destruction of forests that are natural “absorbers” of greenhouse gases are not represented in sustainable agriculture or are represented but in much smaller scale. There are a number of different methods of sustainable agriculture that can be applied in order to protect farmers from the effects of climate change.

Some of these methods include:

- Adapting production to local climate conditions (mixed species plantation or breeding of autochthonous breeds),
- Covering bare land or land between crops with mowed grass, hay or straw to keep moisture longer,
- Installing the rainwater collection tank.

**Preserved natural resources** and improved environmental quality in sustainable production systems **are at service** not only for present but also **for future generations**





**Regional conference “Media, CSO and sustainable agriculture”**

market is definitely created by consumers, and duty of the civil sector is to present the real situation to consumers, that is to all the citizens, and to influence decision-makers to provide healthy environment in which healthy food can be produced. It is exactly what ORCA is doing with partner organizations through its projects. We do the research, detection of problems, propose solutions which we present to decision-makers and we look for better solutions for people, animals, and environment. The goal is to transfer information to citizens, and they are the ones who create the market, thus we together create the area for development of sustainable production – says Elvir.

Nature in the service of agriculture, namely the concept of “high-value agricultural production” is the branch of sustainable agriculture in which special attention is paid to the protection of nature and biodiversity. Agricultural production of high natural value is designed so that it protects nature and biodiversity, and at the same time, it allows sustainable food production and development of rural communities.

– It is very important that the farmers in Serbia and other countries of West Balkans understand and start to apply this concept since it implies the preservation of traditional agricultural systems, which mainly include our



## **AN EXAMPLE OF HIGH-VALUE AGRICULTURAL PRACTICES – Maintenance of hedges, scrub vegetation and trees on the arable land**

Maintaining natural elements such as hedges, scrub vegetation, and individual trees on arable land is of great importance for the preservation of the mosaic-like landscape. Such a landscape has a high natural value because it preserves the richness of plant and animal species that use this mosaic vegetation for movement, rest food or habitat. This practice involves occasional pruning of hedges and shrubs on the margins of arable land. If there are individual trees in the field, it is recommended

to leave them there, that is they should not be cut. Maintenance of scrub vegetation prevents soil erosion because these plants have a very branched and strong root system. Many of the plants that make up hedgehog have a great significance for people. One of the common plants in the fields is *Prunus Spinosa*, popularly known as sloe or wild plum. This plant is very healing, and it has been used for centuries in folk medicine in the area of Western Balkans.



small and medium-sized farms. The concept functions so that the farmers introduce small changes to their practices, which do not hinder the production but stimulate the environmental protection. By protecting the nature, the farmer provides the use of free services of nature for himself, such as pollination, prevention of erosion, natural regulation of the number of insects that can damage crops and many others. In this way farmers, nature and animals can prosper – Elvir explains.

Agriculture is one of the main greenhouse gas emitters. From the conversation with Mr. Burazerovic, we found out that between 2001 and 2011 global emission of gases from livestock and crop production increased by 14 percent. Methane is mostly emitted from livestock production. In Europe, agriculture contributed to the emission of these gases by 10 per cent.

Since 2000 we have witnessed **several extreme periods of droughts and floods in Serbia that have inflicted significant damages and losses of more than 5 billion euros**

## NUMBERS AND FACTS ABOUT NATURE

- About 1,300 liters of water is needed for the production of one kilogram of wheat, thus about 40 liters of water is required for the production of one slice of bread of 30 grams (for raw materials and processing)
- If a slice of cheese of 10 grams is put on that slice of bread, then for the production of both requires around 90 liters of water. (World Water Conference, 2008)
- The number of birds that most commonly inhabit agricultural habitats has dropped by almost 50 percent over the past 30 years (Pan-European Common Bird Monitoring Scheme, 2013)
- Planet Earth will lose up to 50 percent of wildlife species by the middle of this century (Biological Extinction Conference, 2017)
- 18 percent of greenhouse gases emissions are caused by intensive livestock breeding – which is more than traffic emits (FAO Food and Agriculture Organization. 2006)



In Serbia 65 per cent of the territory is covered by agricultural land and as such it represents one of the main pillars of the country's economic development. It is expected that good agricultural policy in Serbia will have a significant role in economic development of the country, but also in the reduction of greenhouse gases through improvement of agricultural practices. Since 2000 we have witnessed several extreme periods of droughts and floods in Serbia that have caused significant damages and losses worth more than 5 billion euros, and more than 70 percent of losses were due to drought and high temperatures. Rural communities are particularly affected by such events.

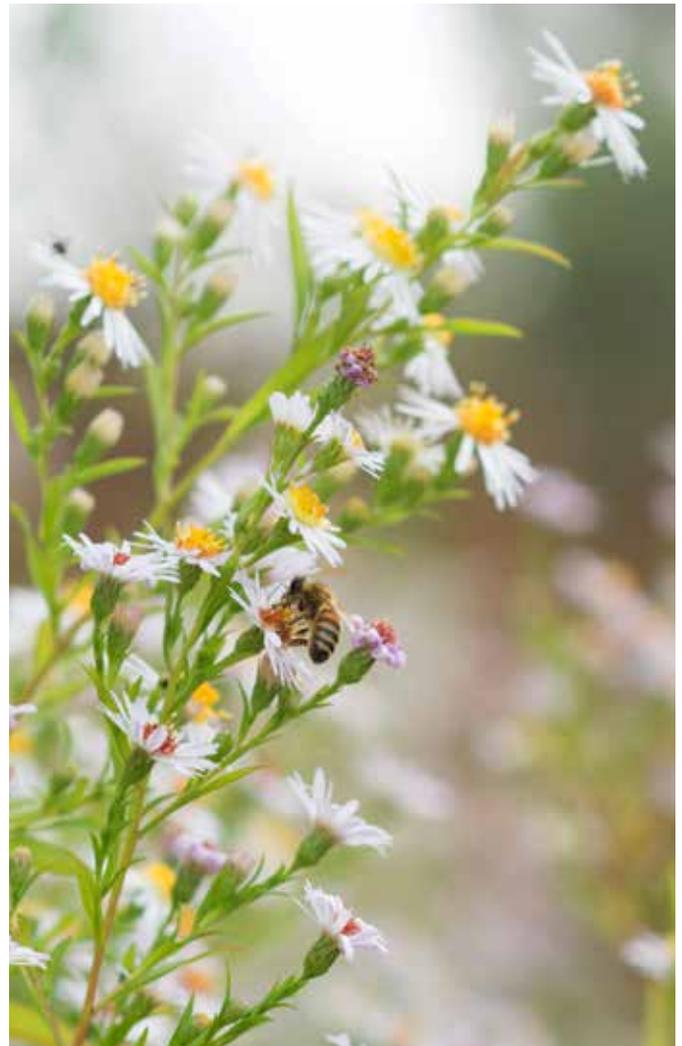
Another project was launched in Serbia in September 2016. The project was aimed at developing a strategy and action plan for climate change at national level, which was also financed by the European Union. It is also expected that this project develops national strategic and legislative framework that would define the priority measures for reducing greenhouse gas emissions as well as to identify responsible institutions for the implementation of these measures.

The goal of the European Union is to make agriculture sustainable and competitive, and the European Union's Strategy on biodiversity aims to stop the loss of biodiversity by 2020 and also ecosystem services. For this reason, in the European Union, there are various financial incentives for farmers who are market-oriented, that is who satisfy the consumer's demand and on the other hand, the ones who protect the nature, biodiversity and health and welfare of animals.

– In Serbia we have access to so-called pre-accession funds which largely serve for the development of agriculture and environmental protection – says Elvir adding that the availability and volume of such funds will be expected to increase in the following years as Serbia continues to make better progress in its path to European integration.

At the end of last year, ORCA held a regional conference for the media of Western Balkans and Energy portal took part in it. The conference was organized as the part of four-year project on "Sustainable Agriculture for Sustainable Balkans", which was funded by the European Union, and the realization was entrusted to ORCA association and its partner organizations from Western Balkan countries with the aim of developing and supporting agro-ecological policies, as well as development of civil sector in the region. The main conclusion from this conference is that the participants realized and pointed out the need for stronger cooperation of civil society organizations, media, and farmers on sustainable agriculture and promotion of principles of agricultural production of high natural value. In addition, the need for creating strategies in order to develop the support to small and medium-sized agricultural producers was highlighted. ORCA will continue to organize these and similar events that will significantly contribute to agro-ecological policies and civil sector in the Western Balkans region.

Prepared by: Nevena Djukic



## THE CONNECTION BETWEEN INTENSIVE AGRICULTURE AND DISAPPEARANCE OF SOME SPECIES OF BEES

Scientists from the University of Auckland (New Zealand) conducted a study to determine the connection between intensive agriculture and the disappearance of domestic bee species. Namely, scientists have planted two meadows with field flowers: one in the vicinity of the land on which intensive agriculture is carried out, and the other in the area surrounding the land where agriculture is of small size. After a while, they noticed that the bee population that visited the first meadow decreased by 90 percent. This study showed that bees do not need a completely unchanged area to survive and continue to pollinate plants, but they need parts of the natural habitat. These parts of the natural habitat, today almost do not exist in regions where intensive agriculture is carried out.

## INTERNATIONAL FAIR RENEXPO® WATER & ENERGY ATTRACTS FOREIGN INVESTORS TO SERBIA AND THE REGION THIS YEAR

The fifth RENEXPO® Water & Energy fair and conferences in the field of renewable energy sources, environmental protection, water and innovation will be held from 24<sup>th</sup>-26<sup>th</sup> April 2018 in Belgrade, in Belexpocenter.

Although established only a few years ago, RENEXPO® is becoming a tradition and a mandatory meeting place for experts, representatives of state authorities, regional and European leaders dealing with topics such as biomass, hydropower, wind power, waste management and new technologies.

The fact that the region of the Western Balkans seeks to align with European and world standards in the field of sustainable business and environmental protection is testament to the fact that interest in conferences is part of RENEXPO® fairs, especially in the field of water.

16 companies from Germany recognized the importance of the market and the possibility of improvement and cooperation, and will be present throughout the three days of the fair.

Also, leaders in this field, Dutch companies and this year are part of the RENEXPO® fair. Presenting its good practice at the last year's RENEXPO fair, the partner country of the Netherlands, after participating in the fair, has made successful projects in Serbia.

More than 100 companies will participate in workshops, conferences, B2B meetings, trade fair, open forum, seminars and other accompanying programs such as opening and evening reception.

Through the three-day program participants and visitors to the fair, among other things, expect the 5th International Conference "Bioenergy Resources of the Western Balkans". Minister Aleksandar Antic said last year at the opening of RENEXPO® fair that biomass is a powerful potential that we have available, especially in southeastern Serbia, which is underutilized. At the conference, the key topics will be what we expect after the FEED IN tariffs, as well as the presentation of credit lines and IPARD programs, or financing methods that might be of interest to small and medium enterprises, as well as agricultural farms that want to improve their production lines and become more energy efficient.

"Improving energy efficiency and investing in renewable energy sources is one of the most important potential for further development and improvement of the domestic economy. Through these investments, significant improvements in business results are possible, as well as more competitive operations, which is of great significance in the present day. businessmen for investing in energy efficiency and renewable energy sources is big and our bank has so far approved more than 150 million euros of loans that enabled domestic businessmen to modernize their production, but also to make their business more efficient and cost-effective. recognized by the organizer of the RENEXPO® fair and that's why we decided to support them this year "- explained Ivan Smiljkovic, member of the Executive Board of ProCredit Bank, the global sponsor of this year's conference.

Special importance RENEXPO® program gives to energy efficiency. Through the two days of the fair, they will be present at the conference "Energy Efficiency in Building and Public Institutions", the new project of the German Society for International Cooperation, GIZ. On the second day we will have the opportunity to attend the first meeting of certified EE managers and discover the status of energy efficiency in building and digitization in Serbia and the region.

The fair is organized by REECO doo from Novi Sad, a part of the international REECO group based in Germany. REECO Group is known for fairs held throughout Europe for two decades. RENEXPO® Water & Energy, together with RENEXPO® BiH, which is held in Sarajevo in October (24th and 25th), aims to provide a clean, innovative and sustainable future, in line with the motto - "Building bridges and opening doors!"

If you want to be part of an international dialogue on key topics of the future, write to [info@reeco.rs](mailto:info@reeco.rs) or visit

<http://renexpo-belgrade.com/en/home-en/>

The Energy Portal, the golden media sponsor of the Renexpo® Fair, invites its readers to join this international platform.



## MICROPLASTICS FOUND IN FERTILISERS BEING APPLIED TO GARDENS AND FARMLAND



Many organic fertilisers being applied to gardens and farms contain tiny fragments of [plastic](#), according to a new study.

Widely considered a problem affecting the oceans, this work suggests [microplastics](#) may actually be far more pervasive. Having entered the soil, the scientists behind the study have warned these tiny fragments could end up in the food we eat.

The production of organic fertilisers is generally considered environmentally friendly as it involves recycling food waste from households and other sources to make useful products that can be used to grow more food. However, contamination of the waste used to produce these fertilisers – which are used by gardeners and farmers alike – means tiny microplastics are making their way into the soil.

“One example is people use plastic bags and then put everything together in the bin, and then this is entering the waste treatment plant and ending up in the fertilisers,” Professor Ruth Freitag, one of the study’s authors, told The Independent.

Professor Freitag, who is based at the University of Bayreuth in Germany, said this is a particular problem in her country due to its progressive composting policy.

Close to 12 million tons of food and garden waste ends up being either composted or sent to biogas fuel plants each year in Germany, due to legal requirements concerning the disposal of organic waste.

By sampling fertilisers produced at different kinds of waste treatment plants, Professor Freitag and her colleagues were able to determine the extent of the contamination problem.

They found the samples had varying amounts of tiny fragments, fibres and spheres of plastics, all smaller than five millimetres, depending on the care with which the compost had been processed.

Though concentrations in the samples were fairly low, with a maximum of around 150 microplastic particles per kilogram, from here the researchers say it is likely the particles will enter the food chain. Ultimately, they could even end up being consumed by humans.

A key point from the study was the finding that different kinds of waste treatment plant produce vastly different concentrations of plastic in the fertilisers.

“We have plants where they use a lot of precautions and there we find hardly any plastic particles, and other plants where they simply use a shredder to prepare everything and break it down – there you find a lot,” said Professor Freitag, adding that this finding shows it is possible to keep organic fertiliser production microplastic-free.

Source: [Independent](#)

## WORLD'S LARGEST DESERT GROWING EVEN LARGER, PARTLY DUE TO CLIMATE CHANGE

The [Sahara Desert](#)—which takes up about 3.6 million square miles of northern Africa—is growing ever larger, signalling daunting news for people living in the Sahel border region who stand to lose valuable arable land to the expanding desert.

The boundaries of the world's largest hot desert, already around the size of China or the continental U.S, have grown roughly 10 percent since 1920 due to natural climate cycles as well as man-made climate change, according to a new study by National Science Foundation (NSF)-funded scientists at the University of Maryland.

As a summary of the new study pointed out, as the Sahara expands, the Sahel retreats—putting the region's fragile savanna ecosystems and human societies under threat.

For the study, published this week in the *Journal of Climate*, researchers analyzed annual rainfall data recorded throughout Africa from 1920 to 2013. Deserts are defined as places that receive less than four inches of rain per year. After analyzing the rainfall data, the researchers determined that many areas in the Sahara now fall under this threshold.

"It is shown that the Sahara Desert has expanded significantly over the twentieth century, by 11 percent-18 percent depending on the season, and by 10 percent when defined using annual rainfall," the study states.

The researchers only studied the Sahara, but the results suggested that other deserts could be expanding as well.

According to the research team, natural climate cycles such as the Atlantic Multidecadal Oscillation and the Pacific Decadal Oscillation have primarily driven the Sahara's rapid expansion, but these forces account for just two-thirds of the Sahara's total expansion. The remaining one-third can be attributed to human-caused [climate change](#).

Source: [Eco Watch](#)

Photograph: Pixabay





Photograph: Pixabay

## HOW SMARTPHONES ARE HEATING UP THE PLANET

When we think about [climate change](#), the main sources of carbon emissions that come to mind for most of us are heavy industries like petroleum, mining and transportation. Rarely do we point the finger at computer technologies.

In fact, many experts view the cyber-world of information and computer technologies (ICT) as our potential saviour, replacing many of our physical activities with a lower-carbon virtual alternative. That is not what study, recently published in the *Journal of Cleaner Production*, suggests.

Having conducted a meticulous and fairly exhaustive inventory of the contribution of ICT—including devices like PCs, laptops, monitors, smartphones and tablets—and infrastructure like data centres and communication networks, we found that the relative contribution of ICT to the total global footprint is expected to grow from about 1 percent in 2007 to 3.5 percent by 2020 and reaching 14 percent by 2040. That's more than half the relative contribution of the entire transportation sector worldwide.

Another disconcerting finding is that all this extraordinary growth is mostly incremental, essentially shattering the hope that ICT will

help reduce the global carbon footprint by substituting physical activities with their virtual counterparts.

Perhaps the most surprising result of our study was the disproportionate contribution of smartphones relative to the overall ICT footprint.

We found that the relative emissions share of smartphones is expected to grow from 4 percent in 2010 to 11 percent by 2020, dwarfing the individual contributions of PCs, laptops and computer displays.

In absolute values, emissions caused by smartphones will jump from 17 to 125 megatons of CO<sub>2</sub> equivalent per year (Mt-CO<sub>2</sub>e/yr) in that time span, or a 730 percent growth.

The lion's share of this footprint (85 to 95 percent) will be caused not by the use of the device, but rather by its production. That includes, in addition to the manufacturing energy, the energy for material mining for gold and the so-called rare-earth elements like yttrium, lanthanum and several others that today are almost exclusively available only from China.

Another guilty participant in this excessive carbon footprint are the phone plans that encourage users to get a new smartphone every two years. That accelerates the rate at which older models become obsolete and leads to an extraordinary and unnecessary amount of waste.

On the infrastructure side, the combined footprint of data centres and communications networks will grow from 215 megatons of CO<sub>2</sub> equivalent a year (Mt-CO<sub>2</sub>e/yr) in 2007 to 764 MtCO<sub>2</sub>-e/yr by 2020, with data centres accounting for about two thirds of the total contribution.

The growth in smartphones and data centres aren't unrelated.

Indeed, it's the dizzying growth in mobile communications that's largely driving the pace for data centres. For every text message, video download, photo exchange, email or chat, there's a 24/7 power-hungry server in some data centre that's making it happen. It's the energy consumption that we don't see.

Finally, and perhaps the most ironic aspect of all this, is that it's software that is driving the overall growth in ICT as a whole, devices and infrastructure included.

Software companies like Google, Facebook, Amazon, Microsoft and Yahoo boast some of the largest data centres in the world. The rise in dominance of the mobile operating systems, namely Apple's iOS and Google's Android, along with the millions of mobile applications that are built on top of those platforms, has spawned the mobile communication age.

The incredible—as well as unsustainable—growth in the emission footprint of all this hardware is there for only one purpose: To support and serve the software universe.

In other words, while it's the hardware that does all the dirty work, it's the software that's calling all the shots.

At the societal level, we must demand that all data centres run exclusively on [renewable energy](#).

At the individual level: Hold on to your smartphone for as long as you can, and when you do upgrade, make sure you recycle your old one. Sadly, only 1 percent of smartphones are being recycled today.

Source: [Eco Watch](#)

## SENSORS EQUIPPED WITH AI COULD THWART ILLEGAL DEFORESTATION



Abstractly, we know that the world's [forests](#) are under threat. We lose somewhere between 80,000 and 150,000 square kilometers — about the size of Maine in the best-case scenario, and Louisiana in the worst — of the world's forests every year to human activities.

But it's much harder to nail down exactly which parts of forest are most at risk, and when, especially because up to 90 percent of tropical [deforestation](#) is due to criminal activity, according to the UN. San Francisco-based nonprofit Rainforest Connection believes that machine learning can be the next ally in the good fight.

The team of engineers and developers built a complex system of sensors that can endure extreme weather and other stresses in the [rainforest](#), using modified smartphones powered by [solar panels](#). The key, they say in a blogpost, is to hide the devices — they call them "Guardians" — amidst the trees in vulnerable areas, so they remain hidden. The sensors record the sounds of the forests and upload them onto a cloud-based server in real time.

Google's AI framework TensorFlow sifts through forest sounds to isolate suspicious noises such as chainsaws and logging trucks in real time.

The software, launched in 2015, is designed to help developers improve services such as speech recognition, or in this case sound detection. Google offers it for free, with a catch. The AI built with TensorFlow can run anywhere, MIT Tech Review reports, but it works particularly smoothly on Google's cloud platform.

So can Rainforest Connection's Guardians, powered by Google, really save the rainforest? Forests already have plenty of high-tech systems buzzing around, from drones spraying seeds to planes equipped with LIDAR beams that assess the density and health of the canopy.

Not even the most sophisticated system can make a difference in isolation — observations of surreptitious logging are meaningless if there aren't laws to protect the forests, and forces to intervene promptly when someone violates those laws.

When the right regulations are in place, keeping an ear out for illegal logging can ensure that conservation laws are put into practice.

Source: [Futurism](#)

Photograph: Pixabay

## 'GREAT PACIFIC GARBAGE PATCH' SPRAWLING WITH MORE DEBRIS THAN THOUGHT

An enormous area of **rubbish** floating in the **Pacific Ocean** is teeming with far more debris than previously thought, heightening alarm that the world's oceans are being increasingly choked by trillions of pieces of **plastic**.

The sprawling patch of detritus – spanning 1.6m sq km, more than twice the size of France – contains at least 79,000 tons of plastic, new research published in Nature has found. This mass of waste is up to 16 times larger than previous estimates and provides a sobering challenge to a team that will start an ambitious attempt to clean up the vast swath of the Pacific this summer.

The analysis, conducted by boat and air surveys taken over two years, found that pollution in the so-called Great Pacific **garbage** patch is almost exclusively plastic and is “increasing exponentially”. **Microplastics**, measuring less than 0.5cm, make up the bulk of the estimated 1.8tn pieces floating in the garbage patch, which is kept in rough formation by a swirling ocean gyre.

While tiny fragments of plastic are the most numerous, nearly half of the weight of rubbish is composed of discarded fishing nets. Other items spotted in the stew of plastic include bottles, plates, buoys, ropes and even a toilet seat.

“I’ve been doing this research for a while, but it was depressing to see,” said Laurent Lebreton, an oceanographer and lead author of the study. Lebreton works for the Ocean Cleanup, a Dutch-based non-profit that is aiming to tackle the garbage patch.

“There were things you just wondered how they made it into the ocean. There’s clearly an increasing influx of plastic into the garbage patch.

“We need a coordinated international effort to rethink and redesign the way we use plastics. The numbers speak for themselves. Things are getting worse and we need to act now.”

Plastic has proven a usefully durable and versatile product but has become a major environmental blight, tainting drinking water and rivers. Around 8m tons of plastic ends up in the oceans every year, where it washes up on beaches or drifts out to sea where the pieces very slowly break down over hundreds of years.

Larger pieces of **plastic pollution** can entangle and kill marine creatures, while tiny fragments are eaten by small fish and find their way up the food chain. Plastic often attracts toxic pollutants that are then ingested and spread by marine life. It’s estimated there will be more waste plastic in the sea than fish by the year 2050.

Much of the plastic waste accumulates in five circular ocean currents – known as gyres – found around the globe. The Ocean Cleanup has pledged a “moonshot” effort to clean up half of the Great Pacific garbage patch within five years and mop up the other rubbish-strewn gyres by 2040.

Source: [Guardian](#)



Photograph: Pixabay

## Dusan Stokic

The Head of Department for Environment Protection, Technical Regulations, Quality and Social Responsibility

# Company's Reputation and Ethical Operation Influence its Competitiveness



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**W**ith talked with Dusan Stokic, Head of Department for Environmental Protection, Technical Regulations, Quality and Social Responsibility in the Serbian Chamber of Commerce, about the activities of this National Center for assistance and support to companies which take place through cooperation with CCIS division associations in all sectors, as well as through representation of interests, but also in many other ways.

**EP** There is an opinion that Serbian companies, in the struggle for survival, are not too interested in the principles of sustainable development, and that only large or foreign companies invest their resources in the preservation of the immediate environment and in the care of the environment in general. Is this even true?

**Dusan Stokic** The principles and goals of sustainable development have a universal, global character, but when transposed to the national level, they are converted into strategies, policies, laws, regulations and other acts. All companies, whether they are micro, small, medium or large and regardless of the type of ownership, must comply with the legal obligations that apply to them. The fact is that, first of all, successful Serbian companies recognize the importance of investing their resources in environmental protection (among other things, that is why they are being

recognized as successful), because not only do they want to meet their legal obligations, but also do not want to jeopardize their corporate image, reputation, and therefore their own business by acting irresponsibly. However, there are companies that operate in the “grey” area and cause environmental damage, and they are subject to the control of competent inspection services and verdicts of judicial authorities, as well as those that still do not recognize that investing in the environment is actually a profitable long-term investment in their own sustainable business.

There are about 20 companies in Serbia, today, that report on their sustainable business operations according to the principles and standards that are internationally recognized. However, there is a whole range of small and medium-sized companies that follow them and learn from them. There are also dozens of good examples and success stories that apply some principles of the circular economy. Even start-up companies that develop eco-innovations and solutions for “smart” cities are starting to appear. These companies know that today, competitiveness is not measured only by the quality of products or services and new technologies, but it also the company’s reputation and business ethics must be taken into account.

**EP** What kind of assistance can a company expect from the Centre for Environmental protection that works with in the Serbian Chamber of Commerce?

**Dusan Stokic** Considering the subject of work and thematic areas it deals with, and which have a horizontal and intersectoral character – environment, technical regulations and standards, quality and social responsibility – the work of this Centre is primarily focused on assistance and support to companies through cooperation with branch associations of the Serbian Chamber of Commerce in industry, agriculture and services sectors as well as through the representation of interests, direct information, training, professional and advisory assistance to companies in their operations in these areas. Involving companies into a realistic view of the state of the environment in order to define optimal negotiating position for Chapter 27 (Environment and climate change), is one of the key tasks in the coming year. Companies from the sectors of industry and agriculture, public companies in the energy and water management sectors are most affected by the implementation of “difficult” cost-effective EU directives, and our Centre and the Chamber system help them prepare for that in the best way. In addition, this Department, together with the CCIS team for the CE marking, provides professional and advisory support to manufacturers and exporters of products subjected to technical regulations for safety, health and environmental protection (CE mark or Serbian sign of

compliance) to prepare more quickly and more easily everything that is required for the free placement of their products on the domestic or the European single market. Also, the promotion and implementation of voluntary “green” initiatives such as the ISO 14000 series of standards, product labeling with Eco-label, EMAS registration, cleaner production, “green” public procurement, are some of the tools and business models we recommend to our members. Finally, the CCIS encourages its members to support basic values of 10 principles of the UN Global Compact and Sustainable Development Goals, through the national network of the Global Compact, while the social responsibility is promoted through the traditional organization of the National Award for Corporate Social Responsibility.

**EP** Within the 7<sup>th</sup> Environmental Action Programme, adopted by the European Parliament and the Council of the European Union five years ago which covers the period up to 2020, the priorities are defined for the reduction of CO<sub>2</sub> emissions as well as reductions in the environmental impact of consumption on the global level, to mention some of these goals. How would you evaluate our results and our contribution to the achievement of these global objectives?



Along with the penal system, which must exist, it is necessary to develop even more intensively the system of prevention, or **prevention of pollution at the source of its creation**

**Dusan Stokic** The fact is that climate change, according to numerous studies, is a global problem, primarily due to more visible harmful effects – droughts, floods, diseases, migration, difficulties in the food supply, conflicts due to economic problems, poverty, lack of resources – and as a result of global warming. In the EU, power engineering, transportation, agriculture and construction each individually is the biggest contributor to the greenhouse gas (GHG) emissions. About 45 percent of all GHG emissions of the EU countries comes from 11,000 thermo-energy and industrial installations in 31 countries. These are mainly thermal power plants, heating plants, oil industry, iron and steel industries, cement industry, non-metal industry, wood processing industry, chemical and petrochemical industry, aluminum production and commercial aviation. With the new EU plan, the energy and climate goals by 2030 are: reducing CO<sub>2</sub> emissions by 40 percent compared to 1990, the proportion of at least 27 percent of energy coming from renewable resources and the increase of energy efficiency by 27 percent. The 7<sup>th</sup> Environmental Action Programme defines key priorities set out to be met by 2020. According to this Program, special attention is paid to the protection of natural capital, the promotion of resource-efficient and low-carbon growth and innovation, and the provision of human health and well-being, – taking into account the natural limitations of the planet Earth. All these global and European trends pose serious challenges for the Republic of Serbia, which is one of the many signatory countries of the Paris Climate Agreement 2015. The Republic of Serbia is among the first countries in the region to draft the document “Intended nationally determined contributions reduce the greenhouse gas emissions on a global scale”, as well as “First biennial update report of the Republic of Serbia under the United Nations Framework Convention on Climate Change”. Along with the Climate Change Strategy and the corresponding law which are being developed, this, of course, will be a good strategic and legislative framework for the implementation of mitigation and adaptation measures, as well as projects to combat climate change. The key challenge will be how to prepare the sectors of energy, industry, and agriculture for these changes and to better plan the project documentation for the financing of investments in this area.

**EP** You once stated that the Serbian Global Compact Local Network of UN Global Compact is one of the most active associations in the region. Can you tell us something more about this network and what is their activity in terms of sustainable development?

**Dusan Stokic** In the world, the UN Global Compact exists in 162 countries and has over 97,000 members. The Global Compact is a framework for companies to comply their activities with ten universal principles in the field of human rights, labor, environmental protection, and anti-corruption.



## THE MOST IMPORTANT ACTIVITIES OF YOUR CENTER FOR ENVIRONMENTAL PROTECTION, TECHNICAL REGULATIONS, QUALITY, AND SOCIAL RESPONSIBILITY

According to Dusan Stokic’s assessment, in the process of adapting to new regulations in the field of environment, companies, especially small and medium-sized companies, often lack timely information on regulatory changes.

The Chamber, with the support of the Center, helps companies by organizing public discussions on draft laws (e.g. Waste Management Law), where entrepreneurs have the opportunity to directly propose changes or amendments to regulations, as well as to launch concrete initiatives to improve the business environment in this field. During 2016, based on the Austrian Chamber of Commerce model, we have also created a “Knowledge Base” containing all the necessary information, documents, data, and instructions on the conditions and procedures for reaching the CE mark and the Serbian sign of conformity – as proof that the product is safe for the consumers’ health, the environment and property, and that it can freely be placed on the domestic or EU market. Additionally, we have independently developed the “Check Your Product” online application, which is used to quickly and easily check whether a particular product complies with the technical regulations for the CE marking and/or the Serbian sign of conformity. Also, at the end of last year and at the beginning of this year, we completed the re-certification of our own quality management system according to ISO 9001 standard – Dusan Stokic says, pointing out that this shows the members of the CCIS that this business model is a good tool for contributing to the sustainable development and business excellence.

In Serbia, the Network Global Compact has existed since 2007 and has 115 members, of which 50 percent are companies. Regionally observed, the Network in Serbia is one of the largest by the number of memberships. In Croatia, the network has 41 members, Macedonia – 16, Bulgaria – 49, Slovenia – 7, which is a good indicator that Serbia has a significant number of companies and organizations that operate according to the principles of social responsibility, and which at the same time identify the importance of this internationally recognized initiative. During 2017, this network was a participant or direct organizer of several events that promote the sustainable development goals. At the national level, I will single out the gathering in Nis “How sustainable development goals stimulate economic growth in the Republic of Serbia”, which was organized in cooperation with the Cabinet of Minister Djukic-Dejanovic, who is in charge of Demography and Population policy and the UNDP Office in Serbia, led by Ms. Karla Hershi, resident representative of this international organization in Serbia. In addition, there is also the event on the role of young people as part of Agenda 2030, the conference “International Cooperation and Development Support in Serbia”, within which the Network representative participated in the panel on the objectives of sustainable development, the meeting “Analysis of sustainable development goals in the Republic of Serbia: understanding connections and opportunities for achieving the objectives of sustainable development and Serbia’s commitment to the accession process “, as well as

other events. On the international level, the Network representative participated in the annual meeting of European Local Networks, which was held in Rome in October. At all these events, as well as many others that have not been mentioned on this occasion, the Network representatives promoted the goals of sustainable development and encouraged organizations to become more actively involved in these processes.

**EP** **What does the sustainable operation of the company mean – and is the lack of money really the biggest problem in the widespread adoption of sustainable business principles or companies also lack the knowledge regarding what measures could be applied, or perhaps it is the awareness of each company’s inseparability from a wider natural and social environment?**

**Dusan Stokic** I would say that the money is there – it exists, but it only needs to be well and wisely managed. Companies that generate higher profits, whether that is due to

**The latest estimates suggest that over the next 15 to 20 years, Serbia should invest another 15 billion euros in environmental protection and climate change**

good management and business strategy or their position on the market, naturally have more opportunities to invest in socially responsible projects. Also, from companies whose main activity is such that they have a greater impact on the environment and human health, they are naturally expected to invest more in the prevention and protection of the environment. With minimal investments, even small companies can start projects and activities aimed at contributing to sustainable development of local communities. It is important to have a good idea, monitor the needs of the local population and specific target groups, and with good will, dedication and engagement of their own human and other resources, significant results of interest for both the company and the community can be achieved. Sustainable business implies that the company equally values the health and safety issues of the employees, the equality, the balance between life and work, then the product quality and safety, the adequate pricing policy, the fight against corruption and bribery. However, at the same time the company’s attitude towards rational consumption of natural resources must be observed, the saving of energy, water, and raw materials, eco-innovations, as well as the care for the vulnerable groups such as children, the elderly, people with disabilities, as well as support for the youngest, most talented and those who need the help the most. The level



## PRINCIPLES OF CIRCULAR ECONOMY IN LOCAL PRACTICE

There are 20 companies in Serbia, today, that report on their sustainable business operations according to the principles and standards that are internationally recognized. However, there is a whole range of small and medium-sized companies that follow them and learn from them. There are also dozens of good examples and success stories that apply some principles of the circular economy. Even start-up companies that develop eco-innovations and solutions for “smart” cities are starting to appear. These companies know that today, competitiveness is not measured only by the quality of products or services and new technologies, but it also the company’s reputation and business ethics must be taken into account.

of company’s social responsibility and level of its success must be evaluated according to the level of significance in solving specific problems in the local community and contribution to the environment and quality of life, and not exclusively according to the amount of invested funds.

**EP Today, in Serbia, only 8 percent of wastewater is purified, which affects the quality of not only water, but also land, food and therefore our health, and the priority of the Ministry of Ecology in the coming years will be precisely this area. So far, we have had a penal policy for polluters, which should be replaced by a preventive approach. Do you think that domestic polluting companies realize the real damage they are making?**

**Dusan Stokic** The latest estimates suggest that over the next 15 to 20 years, Serbia should invest another 15 billion euros in environmental protection and climate change. Most of the investments are required for the implementation of EU directives in the area of water, waste and industrial pollution. For the implementation of the three European Water Quality Directives – the Water Framework Directive, the Urban Waste Water Treatment Directive and the Drinking Water Directive – almost 8 billion euros will be necessary. This will require a lot of engagement from local self-government, public utility companies, and private companies, especially for the preparation of project-technical documentation and development of feasibility studies for the construction of the wastewater treatment system. In general, domestic companies are aware of the impacts of their activities on the environment which is most evident in the general “polluter pays” principle by which polluters

pay different fees and charges for environmental pollution. However, along with the penal system, which must exist, it is necessary to develop even more intensively the system of prevention, or prevention of pollution at the source of its creation in particular. There is still plenty of room for improvement in this area, especially for public and private companies, because they often do not see the economic and other benefits from the application of measures that will prevent or reduce the emission of harmful substances into the air, water or land. These mechanisms, both preventive and punitive, according to me, should be applied consistently and without exception. Various voluntary tools and business models, which I have already mentioned, are available for prevention, and for sanctions, there are competent inspection and judicial authorities whose capacities need to be further strengthened in this area.

**EP At the very end, we are expecting new goals to follow set in the new UN Agenda for Sustainable Development framework. How will that affect companies and their social responsibility policy?**

**Dusan Stokic** Among today’s organizations, both in the world and in Serbia, new business models are increasingly being applied that have one common goal – SUSTAINABILITY AND SOCIAL RESPONSIBILITY. International Standard ISO 26000: 2010 – Guidelines on Social Responsibility – inspired the adoption of a whole set of new standards and guidelines on sustainability. This includes ISO 20400 – Sustainable Procurement, which includes the United Nations Guiding Principles on Business and Human Rights. Then I should also mention the latest standard ISO 37001: 2016 – Anti-bribery management systems, which provides an opportunity for organizations to proactively contribute to the problem of bribery, both through the application of the anti-bribery management system and through the commitment of leadership to establish a culture of integrity, transparency, openness and consistency. In recent years a new concept – circular economy – has emerged. It attracts attention of both the creators of strategies and policies of sustainability at the international and national level, as well as institutions responsible for transposing the key principles of this concept into laws, technical regulations and standards. The British Standards Institute published the BS 8001 standard in 2017, which helps the organization to better manage resources by implementation of the principles of the circular economy in order to achieve financial, social and environmental benefits. The purpose of these new tools, standards and business models is to contribute to the goals of sustainable development, and today’s companies and companies of the future, provided that they want to be competitive and sustainable, will have to adapt and embed sustainability into their business models.



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Jovan Stingić

the Head of Municipal Administration

## KLADOVO – the Green Municipality



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**K**ladovo municipality is one of the four municipalities in the Bor district, with enormous cultural and historical heritage and natural resources. Kladovo has used its potentials to attract tourists and investors in the field of sustainable development. We talked to Jovan Stingić, the Head of municipal administration, about the ecological and other achievements of Kladovo residents, the economic progress of the municipality and tourism development.

**EP** According to the announcements from the Ministry of Agriculture, in early 2018 first calls for proposals for financial grants from the pre-accession funds of the European Union for Rural Development (IPARD) will be announced, which are primarily intended for investments in equipment and machinery for the manufacturing industry and primary production. Since domestic farmers generally do not have information regarding available resources nor are familiar with the project development at the local level, do you plan to provide some kind of system support, inform them or possibly train potential users of the IPARD funds that could help the development of the municipality?

**Jovan Stingić** Although our farmers were eagerly awaiting the IPARD program, a difficulty arose with their limited absorptive capacities to use the funds. Given the previous experience of our society in the process of joining the

European Union, this phenomenon is also to be expected. It is unrealistic to consider that our farmers will be prepared for the use of IPARD in the period when it was mentioned as something that is still ahead of us.

The responsibility for the program implementation lies with the Ministry of Agriculture, which should define the institutional frameworks for providing assistance to our farmers in the utilization of funds. The principle of operation in the municipal administration of Kladovo is to act as the citizen support and, when we notice that there is some gap in the system or lack of logic in the prescribed procedures for exercising some rights or interests of the citizens, we find a way to eliminate the deficiencies and make it easier for the citizens to exercise their rights and interests.

In cooperation with the agricultural advisory service from Negotin, we organized a meeting where experts filled our farmers in on the conditions and procedures for the fund's implementation. The officials in Kladovo municipal administration in charge of agricultural affairs have also been sent on educational courses because they are the first representatives of the government that the farmers, who are interested in the program, make contact with. As an intermediary in establishing contact and creating the connection between reliable consulting organizations in Serbia and Kladovo farmers, our goal is to bring the IPARD meaning closer to the interested parties. The field that is currently a closed book to farmers opens the possibility of

maneuvering and providing unprofessional services that we strive to put an end to.

If through close monitoring of the program implementation in our municipality we notice the effectiveness of the local administration, we will be ready to provide further assistance to the citizens.

**EP Kladovo is often called a green municipality. What would you highlight as the main advantages of your city, due to which this unofficial title was obtained?**

**Jovan Stingic** The phrase "Kladovo - green municipality" has a double meaning. The first refers to natural resources and the environment. One-third of the national park "Djerdap", which is the largest one in Serbia, is located in our municipality. 92 kilometers of river Danube flows through Kladovo, and that part is what we consider, though immodestly, the most beautiful. There are many other sites of exceptional natural beauty, for example, the Miroc Mountain and the Blederija waterfalls.

The second meaning of the phrase refers to the production of electricity from renewable resources. The hydroelectric power plant "Djerdap", which has been producing more than 20 percent of Serbian electricity for nearly 50 years, uses the Danube's power. In the last couple of years, it was joined by the solar power plant "Solaris".

**EP The first solar power plant in private ownership of "Solaris Energy" company is evidence that the municipality continues the tradition of investing in "green" energy, which was first established with the construction of the largest hydroelectric power plant Djerdap. Has there been an increase in interest for investments in renewable energy from the companies in this region, and how is the municipality planning to attract new investors?**

**Jovan Stingic** We immediately noticed the great interest of the Kladovo municipality to implement this project on our territory. We were the first issuers of a solar power plant building permit in the Republic of Serbia. Since we were moving through a path no one had ever paved before us, the construction was not an easy task. The project financiers themselves helped us a lot to successfully execute this job.



Everyone in Kladovo municipality is extremely proud of the successfully executed „Solaris” power plant project.

In such complex tasks, the local self-government also needs to help the potential investor in relations with representatives of other levels of government, so we have often been in contact with local distribution, fire police, and cadastre, who were also part of the team that helped in the realization of the construction.

When you ask me what the municipality does to attract donors, whether from Kladovo or some other city, the answer is the maximum help to realize their planned investments. The financiers of the solar power plant have shared their positive experience, so we have obtained the best kind of marketing, in the spirit of our proverb that good news travel fast.

**EP How much is tourism developed in Kladovo, what are the accommodation capacities, and what is the annual number of visitors?**

**Jovan Stingic** Tourism is the economic sector that dominates the entire Kladovo economy. Hotels "Djerdap" and "Aqvastar Danube" have a key role in tourism development investing significant resources for improving the tourist offer in Kladovo.

In the last three years, the largest amount of money invested in tourism in our municipality was done by the Institute of Sport and Sports Medicine, which invests in the tourist village "Karatat" in order to become a national training center.

The annual number of visits, according to official data, is more than 50 thousand overnight stays. However, we believe that this number is even higher because there are many people who stay in private accommodation. As the last few years resulted in the expansion of this type of accommoda-



tion, many Kladovo residents are offering their apartments and houses which they turned into tourist apartments.

**EP What are the main tourist attractions and are there plans to organize some additional festivals, considering that, for example, the ethno-festival is exceptionally visited with a record number of 5.000 guests in 2017 coming only from Romania?**

**Jovan Stingic** The hydroelectric power plant “Djerdap 1” has been the most attractive tourist destination in Kladovo for the last five decades. The National Park is also important, as are many cultural and historical monuments that originate from different periods, from the first century AD to the modern times. I’m primarily referring to the legacy of the Roman Empire which is located on municipality’s territory: Trajan’s tablet, Trajan’s Bridge, the fortress “Diana”. I must admit that the accessibility of these and other cultural and historical monuments is limited and some of them are neglected. The responsibility for this lies with the Municipality and the Republic. For several years now, Kladovo has had the complete project and technical documentation for the reconstruction and rehabilitation of the “Fetislam” Fortress prepared but does not have the necessary funds.

Ethno-festival is a tourist event with a 12-year tradition which attracts a large number of guests. Lately, there is a very strong visiting trend from our neighbours from Romania, not only during the Ethno festival but throughout the year. Romanians are coming in such a great number that it can be said that they are the dominant guests in Kladovo bars and represent the main market for Kladovo hospitality industry.

**EP** What are further plans for the development of the municipality for 2018 and what will be the primary focus of the management?

**Jovan Stingic** In 2018 the municipality of Kladovo is planning significant investments in public infrastructure. We have agreed on the following tactics: in the first half of the year, we will invest the funds in the development of the project and technical documentation, and in the second half we will announce the calls for tenders for contractors and start with construction works.

We have already started with the reconstruction of Kladovo primary school which is 1.1 million euros worth. The repair of the bridge damaged by floods in Velika Kamenica is also in progress. We also announced a public procurement for development of the project and technical documentation for the reconstruction and adaptation of the health center in Kladovo. We believe that this will be a historic job. The financier will be the Public Investment Management Office, and several millions of euros will be invested. We are also planning to develop the project-technical documentation for the aqua park or swimming pool, depending on what the feasibility study proves to be more appropriate.

**EP** We know that the Implementation Agreement of the “Heritage on the Danube border” project was signed, which is co-financed by the European Union within the framework of the cross-border cooperation between Romania and Serbia from the IPA funds in the amount of 1.3 million euros. Kladovo Municipality is the leading partner on this project. What is planned to be implemented in the municipality from these funds?

**Jovan Stingic** The project “Heritage on the Danube border” envisages the construction of the visitor center in the fortress “Fetislam” whose estimated value is 940 thousand euros. At the end of February, the tender procedure was completed. We expect that with the beginning of the construction season will also begin the work on the construction of this facility.

Among other project activities, we can distinguish the research and recording of the cultural heritage and customs in our region and in neighboring Romania, for that purpose we created the teams which have a task to gather as much material as possible and make audio and video recordings.

Interview by: Jelena Kozbasic



We also announced a public procurement for the development of the project and technical documentation for the reconstruction and adaptation of the health center in Kladovo. We believe this will be a historic job.

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### Facts and figures 2018\*

- 120 exhibitors
- 2.000 professional visitors
- 700 conference participants
- 2.500 m<sup>2</sup> exhibition area
- 25 countries

\*expected

#### TUESDAY, 24TH OF APRIL 2018

- 2nd SOLAR ENERGY FUTURE MARKET CONFERENCE (09:00-11:30)
- OFFICIAL OPENING & VIP TRADE FAIR TOUR (11:30-12:30)
- PROFESSIONAL GET TOGETHER (12:30 - 14:00)
- 5th WIND POWER SERBIA ROUND TABLE (13:00-15:30)
- 2nd ENERGY EFFICIENCY IN BUILDING CONFERENCE - GIZ (14:00-15:30)
- B2B: RENERGY BROKERAGE EEN (10:00-17:00)
- INVESTMENT BUSINESS LOUNGE (10:00-17:00)

#### WEDNESDAY, 25TH OF APRIL 2018

- 1st ENERGY MANAGERS SERBIA MEETING (10:30-16:00)
- 3rd SUSTAINABLE WATER AND WASTE WATER MANAGEMENT CONFERENCE (09:00- 16:00)
- 5th INTERNATIONAL BIOENERGY CONFERENCE WESTERN BALKANS (09:00-12:00)
- 2nd SUSTAINABLE TRANSPORTATION CONFERENCE (13:30-16:00)
- INVESTMENT BUSINESS LOUNGE (10:00-17:00)

#### THURSDAY, 26TH OF APRIL 2018

- 5th INTERNATIONAL HYDROPOWER IN THE WESTERN BALKANS CONFERENCE (09:00-13:00)
- 5th INTERNATIONAL BIOGAS CONFERENCE (09:00-12:30)
- 1st WATER WORKSHOP BARTHAUER SOFTWARE (09:00-16:00)
- 3rd SOLID WASTE MANAGEMENT SEMINAR WASTE TO ENERGY (14:00-17:00)
- INVESTMENT BUSINESS LOUNGE (10:00-17:00)

\*Subject to change

## Exhibitor's extract 2017



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# FROM HARMFUL AMBROSIA OVER PELLETS TO A WARM HOME

**T**he large family home belonging to Rade Vujic from Sitnes near Srpac in Republika Srpska is probably the only building in the entire area that is being heated by combustion of a nearly indestructible weed – ambrosia.

Rade came up with the idea to build his pellet production system when he noticed that all farmers discard huge amounts of diverse plant waste coming from grain crops. After the idea was born, he spent another two years building and finishing up the line for waste grinding and producing pellet for heating.

Diligent local from Sitnes has been trying to produce pellets from a different type of grain waste, but it turned out that ambrosia was the ideal solution. As he was developing his patent, he encountered many obstacles.

– It has not been easy. There have been a lot of problems. Some things did not work properly, the raw material was getting stuck, the adhesive did not work and so on. I was persistent, and I managed to improve my production line, so I can now make sufficient quantities of heating material from ambrosia – Rade Vujic said.

One ton of standard wood pellet on the market of Republika Srpska reaches the price of about 30 thousand dinars, and Rade allocates 15 times less money for making the weed equivalent, only 1800 dinars.



– That is how much I spend on the electricity needed for production. Ambrosia grows everywhere around here, a plant that everyone wants to eradicate, but they do not succeed. Hence, the raw material for my furnace grows right under the window of my house, but also in the whole area. There is no need to be concerned about the lack of raw materials – this hard-working man from Srpac said.

Part of the required material for the pellet production Rade is obtaining by separating the cultivated soybean from ragweed. He has no expenses because he would anyway have to dispose of weeds. Searching for the right kind and form of raw material, he also tried to pelletize it in a raw state, however, he was not satisfied with the quality of the pellets obtained in this way.

– What encouraged me the most was that I discovered on the Internet that no one has tried to do this yet. In the end, I managed to succeed in my plans, but it needs some improvement because after burning the pellets there is a lot of ash residue. And I would have mastered this as well by now, but last year I did not store sufficient amounts of raw material because I was not sure if I was going to accomplish what I planned. For the following winter, I will store significantly more ambrosia because I plan to extrude it and squeeze the oil out of it, and currently I also make the pellet from paper. Its pelleting process increases operating costs because the machine parts wear out more due

to the dryness of paper and lack of the adhesive. In the production of pellets from ambrosia, I use bran and flour as a connective tissue, instead of industrial adhesives.

The villagers are familiar with the project of their neighbour and occasionally drop by to check if he has completed it. Of course, he is also being the focus of the journalists.

As ambrosia provokes countless harmful effects on human health, ecology, and agriculture, Rade believes that he should receive the subsidy from the municipality or the state.

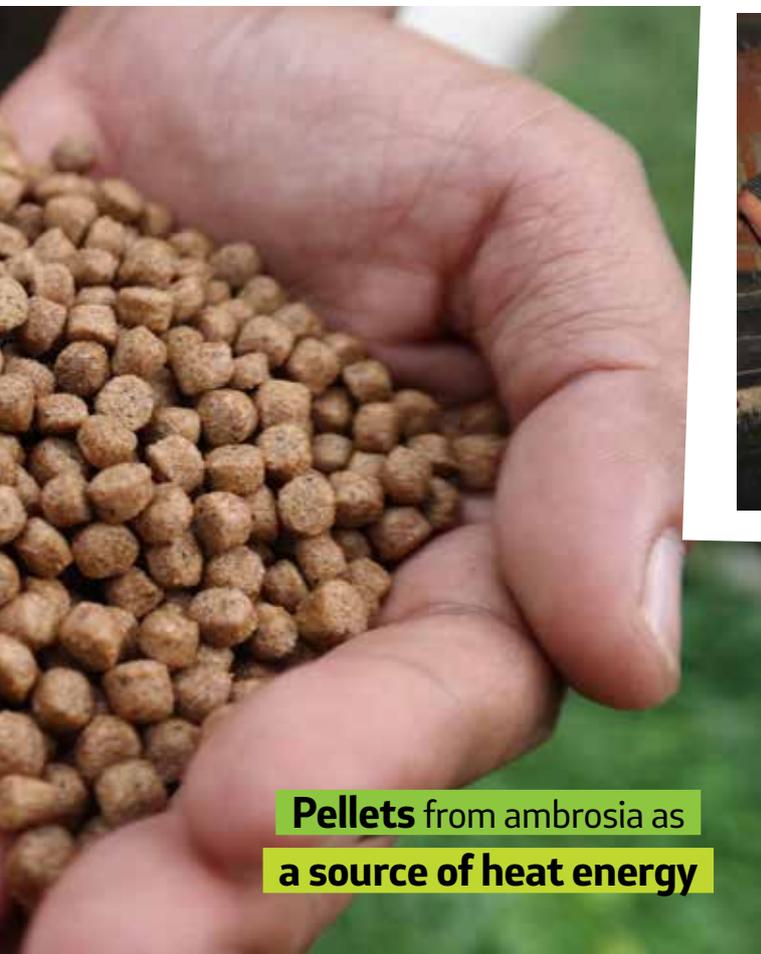
– During summer and autumn, I cut dozens of fields covered with ambrosia. Provided that somebody else also makes this production plant, there would be a great benefit for the whole environment. If I receive the subsidy, I would improve my pellet line, and maybe produce pellets for the market – the innovator from Sitnes said.

However, so far, he has not sought the government's incentive. According to him, he first wants to completely refine his invention and obtain the pellets that leave up to two percent of ash when burned. Aware of the difficulty of this endeavor, Rade Vujic still hopes to meet his goal.

He has not yet taken his unusual pellet samples for calorific value analysis precisely because he is not entirely satisfied with its performance, but he noticed that, compared to its wood competitor, the ambrosia pellet raises the temperature in the furnace more quickly.

Jelena Kozbasic

Photographs: Bosko Grbic



**Pellets from ambrosia as a source of heat energy**



### INNOVATOR FROM SITNES

Rade deals with mechanics, agriculture and livestock breeding, so he has multiple benefits from his unconventional innovation. His hands and mind of a mechanic are busy, the fields are clean, and the house is heated with minimal expenses. He is also active at the social level, particularly in the Folk Society "Motajicki vuk" and he was also elected president of the Council of the Sitnes Local community.



THE AVAILABILITY  
OF RESOURCES  
AND INFORMATION  
LEADS TO ENERGY  
EFFICIENCY

**S**outh East Europe region (SEE) faces many difficulties in the energy sector as a result of its turbulent history, the decadence of infrastructure and collapse of national economies. Although energy prices in Southeast Europe continue to be significantly lower than in European Union, the abolition of state regulations and transition to a liberalized energy market leads to the increase of prices. It can be expected that this will create significant problems in meeting the basic needs for energy among the population which could open the path to unsustainable, unhealthy and uncertain future.

## What is Energy Poverty?

Energy poverty represents the inability of the household to provide the adequate amount of energy for the home, that is necessary for maintaining the living space warm enough and well-lit, then the inability to access the necessary spectrum of energy services as well as the inability to afford sufficient amount of energy for everyday needs.

– Defining energy poverty has provoked many debates. An increasing number of research shows that different combinations of indicators should play a role in the assessment of energy poverty. Energy poverty in the Balkans is extremely widespread and it requires immediate action regardless of the exact definition of energy poverty or its threshold value – said Lidija Kesar from NGO Fractal who was one of the contributors to the publication “Energy Poverty in South-East Europe: Surviving the Cold”.

It is proved that the life in energy poverty has harmful effects on health, which implies high levels of pulmonary diseases, as well as increased mortality in the winter and poor mental health.

It is wrongly assumed that energy poverty has the same characteristics throughout the region, and through practice, it has been shown that regional and historical differences play an important role in the incidence and characteristics of energy poverty. Although it is difficult to determine what makes a certain amount of energy adequate for a home when it comes to adequate heating, we can say that it is just the optimal temperature for health, and according to World Health Organization, it should be 21 degrees in the living rooms or 18 degrees in other rooms.



## WHAT SHOULD BE DONE

Civil societies organizations within SEE SEP propose the following\*:

- Continue discussions on the topic in order to adopt a measurable definition of energy poverty – at the national, regional and EU levels;
- Develop and adopt national, regional and EU indicators for monitoring energy poverty;
- Conduct a detailed analysis of the problem at a national level in cooperation with the Statistical Office of the Republic of Serbia;
- Provide publically and easily available data from Statistical Office of the Republic of Serbia on energy and living costs (on annual basis);
- Improve data collection on the basis of selected indicators, so that results can be compared between countries, monitor changes over time and continuously monitor energy poverty statistics;
- Improve definitions of vulnerable groups at national, regional and EU level.

\* Recommendations are based on the presented and debated recommendations established during the conference on energy poverty in South-East Europe, organized under the REACH project in the European Parliament on 1st June 2016, taking into account the results of pilot project implemented in all 7 countries within the projects – SEE SEP, REACH, REACH CEI and With Knowledge to Warm Home.

## Who is Sensitive to Energy Poverty?

Endangered groups are those that according to the economic, socio-demographic and energy indicators of households are more likely to become energy poor than the general population. For example, it has been established that social welfare beneficiaries are significantly more energy-poor than the average population and that single parents have more chance to be energy-poor compared to households with both parents. Pensioners are more often energy-poor compared to employed persons. Older people are usually affected by energy poverty because they spend most of their time at home. At the same time, it is important to keep in mind that belonging to a particularly vulnerable group does not necessarily mean that a person or a family is energy poor.



While the governments of South-East Europe are struggling to align their policies with the EU acquis, clear guidelines on how to deal with energy poverty or the issue of vulnerability do not arise. The European Commission recognizes the fact that the problem of energy poverty is on the rise and that there is still no clear framework. The Working Group on Endangered Consumers was established in 2013 with the aim of conducting a qualitative and quantitative review of various aspects of vulnerability and it should provide recommendations for the definition of vulnerable groups of consumers in the energy sector. However, it was concluded that it is not possible to have a unique definition of vulnerable consumers that relate to the entire EU.

## What is the Situation in Serbia

Most of the residential buildings in Serbia were built before 1962 and they make up about 59 percent of all housing units. In the period from 1962 to 1991, 36 percent of the existing buildings were built that feature high energy consumption of final energy and inefficient secondary heating installations. Today most tenants (97.3 percent) live in the flats owned by one of the household members. Renting of social apartments is not common. Households that rent flats live above the poverty line, and most of the population that live below the poverty line (85 percent) live in homes that they have built by themselves, while 9 percent live in buildings.

– More than 50 percent of the consumed energy in Serbia goes to the housing sector. The average household in Serbia uses over 4,700 kWh of electricity annually, which is in line with consumption in other SEE countries, but more than the European average. Also, the rate of non-payment of services to the companies that supply households with energy is high – says Lidija Kesar.

According to the data that are at Lidia's disposal, households in Serbia spend on average 11.3 percent of their income on consumed energy. Energy costs relatively high

compared to available revenues, then underdeveloped and inefficient heating systems, as well as an inefficient housing fund, represent the causes of high vulnerability to energy poverty in Serbia.

By advancing in the process of harmonizing legislation with the EU acquis, Serbia has made the best progress in the region in the effort to create a scheme to protect people who are endangered by energy-related costs.

NGO Fractal visited a hundred households in three Belgrade municipalities: Palilula, Zvezdara and Savski venac within the study on “Energy poverty in Southeastern Europe: Surviving the Cold”. Participants in the research were selected on the basis of their status as recipients of social assistance and the selection procedure was performed in cooperation with municipal branches of the Center for

**Energy poverty should be included in national programmes by using the following measures as guidelines:**

- Cheap energy efficiency measures and energy savings measures (efficient indoor lightning, ways for preventing draught through doors and windows, reflective films for radiators, thermometers, etc.)
- Replacement of household appliances (“old for new”)
- Replacement of inefficient heating system (using renewable energy sources when possible)
- Different methods of restoring of building facades:
  - Replacing windows and doors
  - Roof insulation
  - Wall insulation
  - Floor insulation
  - Promotion of deep renovation of buildings whose tenants are endangered and if it is possible provide them with replacement apartments in case of impossibility of renovation due to the age of a building
- Subsidies for energy efficiency measures with high co-financing rates and the support system for filling in paperwork, as well as strict selection criteria
- Minimizing bureaucracy
- Non-interest loans for deep renovation
- Restoration of all state-owned social housing
- Requirements for low energy consumption for all new social housing
- Campaigns for “energy literacy” for vulnerable groups of people

Social Work of the City of Belgrade. This Research was performed within the project REACH (Reduce Energy and Change Habits).

The lack of living conditions, insufficient knowledge of the opportunities for rational energy consumption and energy efficiency measures are the three most common features of the visited households. The households are mostly settled in very poor housing units, where all signs of energy poverty can easily be recognized.

– Damaged facades and traces of mould are clearly visible, especially in the ground floor of buildings or houses, and in the basements. Pipes and heating installations are in many cases uninsulated, which contributes to the increase of unnecessary heat losses with simultaneous increase of the bills. Moisture, as well as poor lightning, were present in the apartments. All the visited households have the problems with the lack of resources and the lack of information. Although the number of hundred households is extremely small to show a wider picture of the situation, the findings that we have come to, still illustrate the seriousness of the situation of those who are exposed to energy poverty in Serbia – Lidija explains.

For members of the visited households, regular payment of bills represents a significant problem and requires cutting of the most other vital necessities for a normal functioning of a household. Irregular payment or complete inability of paying bills creates fear from possible power cuts.

Although there is a significant potential for improvement, when it comes to consumption habits it is necessary to point out that members of the visited households show great interest and invest huge efforts in order to reach a balance between savings in consumption and expenditures on the one hand and sufficient heat and energy on the other hand in order to preserve health and accomplish everyday activities.

Finally, it can be concluded that due to a modest financial situation and lack of appropriate information for a specific situation in their homes, they do not have the possibilities for the improvement of energy efficiency and the improvement of their living conditions.

Prepared by: Nevena Djukic



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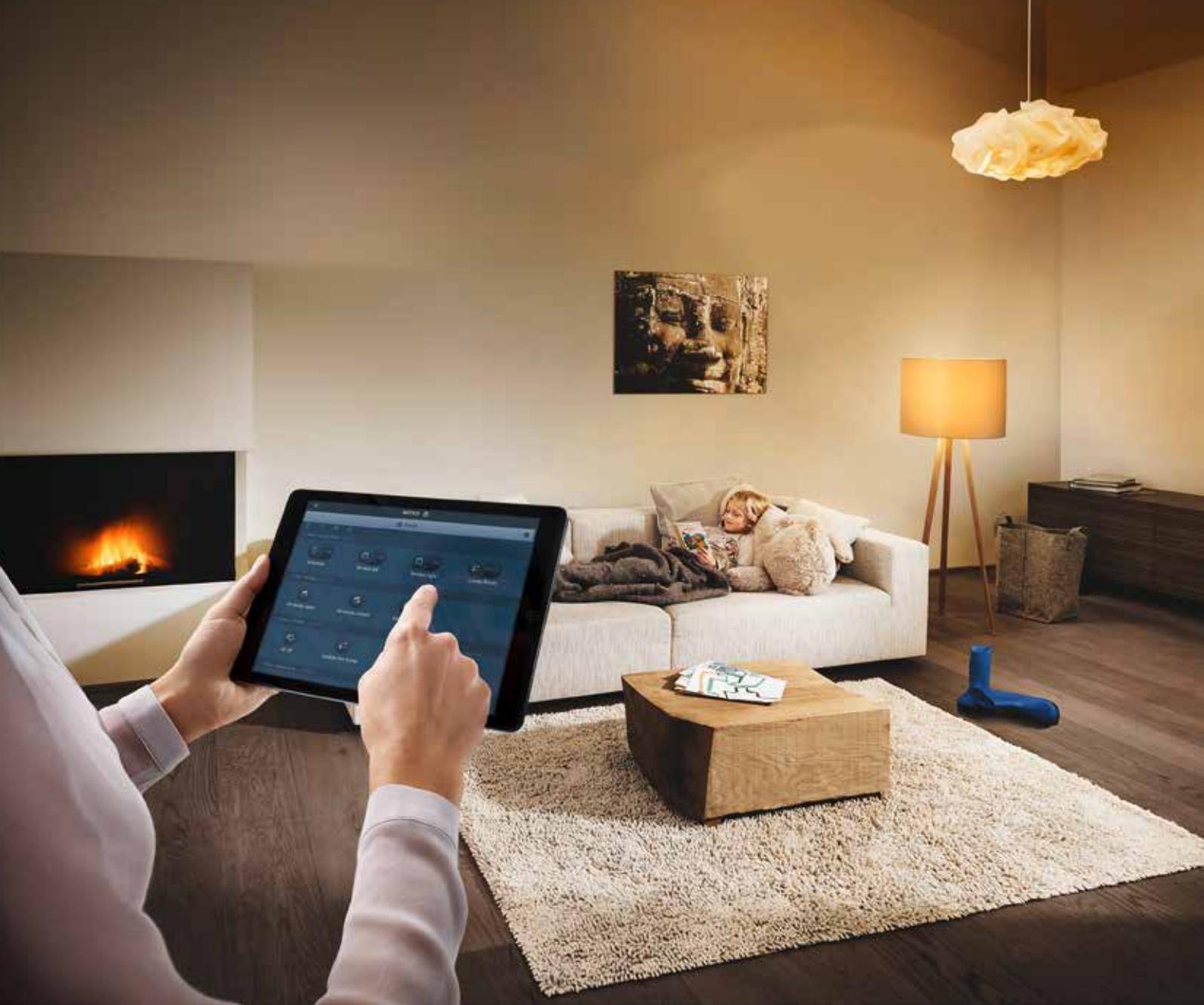
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