1. INTRODUCTION

Economic development and social progress today are not possible without incorporating the principles of sustainable development. The aspect of sustainability is woven into all activities at the level of states and companies that fight for their best possible position in a competitive environment, and it also applies to every individual in order to preserve good health in an ecologically sustainable living and working environment.

In order to increase the competitiveness of the economy, the emphasis is placed on the efficient use of resources, reducing the negative impact on the environment and the importance of waste prevention through the implementation of appropriate principles at the state, regional and local levels, including households.

Competitiveness lists and rankings according to business conditions encourage countries to compete on the world market in achieving the best possible competitiveness, based on...
sustainable development. For this reason, we have singled out the indicators that, in our opinion, have the greatest impact on the country’s potential for improving sustainable competitiveness and bringing Serbia closer to the most competitive national economies.

The subject of this work refers to the analysis and possibilities of improving the sustainable competitiveness of the economy of the Republic of Serbia through the research of consumer behavior and their impact on the environment.

Sustainable competitiveness is defined as a set of institutions, policies and factors that make the national economy more productive over a longer period, while ensuring environmental sustainability. The concept of competitiveness and environmental sustainability are linked. The natural resources of our planet are limited and by developing sustainable practices, starting from the behavior of each individual, productivity increases, especially by implementing the life cycle assessment method.

Life Cycle Assessment (LCA) analyzes the potential impacts of the life cycle on the environment, identifies critical points that can indicate the reduction of these impacts and determines the environmental burden through all subsystems of the life cycle.

Based on the subject and the starting point of the research, goals have been set that have their own scientific and social character, which is why they can be classified into two special groups.

For this reason, the research of the sustainable competitiveness of the economy of the Republic of Serbia, the determination of environmental indicators related to consumer behavior, as well as the optimization of environmental parameters and the improvement of sustainable competitiveness, is the goal of this work.

The social goals of the research are related to the assessment and improvement of the sustainable competitiveness of the Republic of Serbia through analysis from the aspect of consumer behavior, with the aim of reducing the burden on the environment in order to improve the living conditions of the population and preserve natural resources for future generations.

2. SUSTAINABLE COMPETITIVENESS OF NATIONAL ECONOMIES

In its documents as early as 1987, the United Nations clearly emphasized that sustainable development should meet current needs, but without jeopardizing the ability of future generations to meet their needs. This definition includes dimensions of development that go beyond the usual aspects of economic growth and include both material and non-material needs of the population.

According to the World Economic Forum, the concept of sustainable competitiveness emphasizes that productivity is the driver of prosperity and long-term growth, and sustainable competitiveness is defined as a set of regulations that make the national economy productive over a long period while ensuring the sustainability of society and the environment.

The sustainability of society means that institutions and regulations enable all residents to have the best health and safety and to increase their potential, thereby contributing to the economic prosperity of the country in which they live. Environmental sustainability implies the existence of institutions and regulations that ensure efficient management of resources and creation of prosperity for current and future generations. The essence of sustainable competitiveness is to determine not only whether the country has the potential for development in the medium and long term, but also whether the development process contributes to the creation of a prosperous society.

Competitiveness and environmental sustainability are linked both at the state level and at the company level. At the state level, it is necessary to find an appropriate balance between the development of technology and the use of limited natural resources. The business sector is more interested in environmental issues than it was a few decades ago. Companies have become more aware that pollution, climate change and resource scarcity affect them too, for example through supply chain disruptions caused by unpredictable weather conditions. Stricter environmental regulations can
Affect business, when companies face higher prices for production inputs.

However, as consumers also become more aware of sustainability, companies out of concern for their reputation are beginning to voluntarily inform the public about their environmental impact. They also undertake appropriate actions in the sector in which they operate. This shows that there is a significant connection between environmental sustainability on the one hand, and competitiveness on the other hand, which has a multiple impact on the economy and society as a whole.

Health problems related to the environment force governments to finance additional health programs. A quality natural environment improves the productivity of the labor force, by reducing the damage to health caused by pollution or environmental degradation. As health affects productivity and pollution affects health, the effort to reduce pollution is an investment in human capital. Research shows that lower ozone levels have a positive impact on productivity.

Efficient use of natural resources implies responsible management of limited raw materials, as well as the use of renewable energy sources to reduce production costs, ensure their availability for future generations and reduce pollution. Climate change leads to extreme weather events that can destroy infrastructure and industrial supplies and disrupt the regular flow of goods and services both within a given country and between countries.

Agriculture is most exposed to the effects of climate change, such as increasing temperatures, water shortages and extreme weather conditions. Business practices that reduce carbon emissions can positively impact long-term competitiveness. Improving energy efficiency through changes in resource management, investing in technology development and using energy infrastructure that meets environmental standards can achieve significant savings relatively quickly. At the same time, it should be borne in mind that it is impossible to achieve progress in the preservation of the environment without educating and raising the awareness of each individual about the complexity and importance of sustainable development and the participation of the entire population in changes.

3. INDICATORS OF SUSTAINABLE DEVELOPMENT

The sustainable development goals of the 2030 Agenda came into effect on January 1, 2016, after the adoption of the Resolution at the United Nations Summit, held from September 25 to 27, 2015 in New York. These goals relate, first of all, to the eradication of poverty along with economic development, raising the level of health, environmental protection and education, as well as the fight against climate change, on a global level by 2030. States must adequately use their resources to fight poverty and the consequences of climate change, as well as to address inequality.

In order to achieve the goals of the 2030 Agenda, cooperation between governments, businesses and the population is necessary.

Table 1 describes the goals of sustainable development according to the aforementioned Agenda.

The first goal of sustainable development is related to the eradication of poverty while providing assistance to populations affected by armed conflicts and significant climate change. The number of people living in extreme poverty has decreased significantly, from 1.9 billion in 1990 to 836 million in 2015. However, there are still too many people who do not have enough food and adequate drinking water.

Envious economic growth in India and China has led to uneven development, as women in a far greater percentage are affected by poverty due to unemployment and insufficient access to education.

South America, Central and Eastern Asia and the Caribbean have made great progress in ending extreme hunger. As a result of the drought and deterioration of the quality of the environment in 2014, there were 795 million malnourished people in the world. Another goal of sustainable development is to end...
hunger, while promoting access to markets and land for all people.

The third goal of sustainable development is to ensure health care and prevent the spread of AIDS, malaria and tuberculosis. Between 2000 and 2013, HIV infection was reduced by 30%, while 6.2 million people were saved from malaria. However, despite this progress, 6 million children die annually from preventable diseases.

**Table 1. Sustainable development goals of the 2030 Agenda**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eradicate poverty</td>
<td>The fight against poverty in the world</td>
</tr>
<tr>
<td>Eradicate hunger</td>
<td>Fighting hunger, ensuring safe food and sustainable agriculture</td>
</tr>
<tr>
<td>Ensure good health and well-being</td>
<td>To enable good health and well-being for all</td>
</tr>
<tr>
<td>Quality education</td>
<td>Achieve inclusive and quality education and lifelong learning</td>
</tr>
<tr>
<td>Gender equality</td>
<td>Ensure gender equality and women’s empowerment</td>
</tr>
<tr>
<td>Access to clean water and sanitary conditions</td>
<td>Provide sanitary conditions and access to clean water for all people</td>
</tr>
<tr>
<td>Affordable and clean energy</td>
<td>Provide reliable energy supply at an affordable price</td>
</tr>
<tr>
<td>Decent work and economic progress</td>
<td>Promote sustainable economic growth, employment and decent work for all</td>
</tr>
<tr>
<td>Industry, innovation and infra-</td>
<td>Advocate for flexible infrastructure, sustainable industry and innovation</td>
</tr>
<tr>
<td>structure</td>
<td></td>
</tr>
<tr>
<td>Reducing inequality</td>
<td>The fight for equality between states and within states</td>
</tr>
<tr>
<td>Ensure the sustainability of</td>
<td>Advocate for safe and sustainable cities and settlements</td>
</tr>
<tr>
<td>cities and settlements</td>
<td></td>
</tr>
<tr>
<td>Responsible production and</td>
<td>Enable sustainability in the area of production and consumption</td>
</tr>
<tr>
<td>consumption</td>
<td></td>
</tr>
<tr>
<td>The fight against climate change</td>
<td>Take immediate measures against climate change</td>
</tr>
<tr>
<td>Water World</td>
<td>Conservation and responsible use of water resources</td>
</tr>
<tr>
<td>Life on earth</td>
<td>Effective management of forests, suppression of soil degradation and</td>
</tr>
<tr>
<td></td>
<td>destruction of biodiversity</td>
</tr>
<tr>
<td>Peace, justice and strong institutions</td>
<td>Advocate for peaceful and inclusive societies, access to justice for all and effective institutions</td>
</tr>
<tr>
<td>Cooperation to the goal</td>
<td>Strengthen cooperation on a global level</td>
</tr>
</tbody>
</table>

Significant progress has been recorded in the field of primary education, as a 91% enrollment rate was achieved in 2015 in developing countries, while the total number of children who stopped education was halved. The sub-Saharan African region had the greatest success in enrollment in primary education, from 52% in 1990 to 78% in 2012.

However, children from the poorest families drop out four times more often than children from the richest families. The fourth goal of sustainable development is inclusive education of satisfactory quality, as well as for all children to complete free primary and secondary education. Also, accessible and high-quality higher education should be ensured.

The fifth goal of sustainable development is gender equality and prevention of discrimination against women. Significant progress has been made, as 41% of women are paid for their work outside of agriculture, compared to 35% in 1990. But it is necessary to improve reproductive health and achieve equal rights to property.

A big problem on the world level is the insufficient amount of adequate drinking water. More than 40% of the world’s population has a problem of lack of water, while in 2050, 25% of the population will face the problem of a constant lack of water. The sixth goal of sustainable development is affordable and correct drinking water available to the entire population, and international partnership is necessary for the introduction of water purification in underdeveloped countries.

In 2011, renewable energy sources had a share of over 20% in the produced electricity at the global level. But 20% of the population does not have access to electricity. The seventh goal of sustainable development is therefore the global supply of affordable electricity while investing in the use of solar and wind energy and thermal sources. Modernization of technology for clean energy sources in underdeveloped countries will improve environmental protection.

The middle class in underdeveloped countries represents 34% of the working population. However, in 2015, there were 204 million
unemployed, so the eighth goal of sustainable development is dignified work and economic progress, i.e. contribution to economic progress through the improvement of technology and entrepreneurship, while ending forced labor.

Over four billion people do not have access to the Internet, with 90% of them living in underdeveloped countries. The introduction of the Internet implies access to information and the development of innovations. The ninth goal of sustainable development refers to the development of industry, innovation and infrastructure, because investing in these areas encourages economic growth.

The tenth goal of sustainable development is the reduction of inequality. Unfortunately, income inequality is increasing, with the richest 10% of people earning 40% of income and the poorest 10% only 2-7% of total income globally. Also, inequality increased by 11% in underdeveloped countries. It is necessary to change the regulations, foreign direct investments for the most vulnerable areas, as well as the introduction of safe mobility of the population.

Although already now over 50% of people live in urban areas, it is estimated that in 2050 that number will reach as many as 6.5 billion, or two thirds of the world's population. In 1990, there were 10 megacities in the world, and in 2014, their number increased almost 3 times. The eleventh goal of sustainable development is related to sustainable cities and settlements, i.e. safe housing, improvement of the poorest communities, investment in public transport and more green areas.

The twelfth goal of sustainable development is responsible production and consumption, with a significant increase in environmental protection, by changing the way products are produced and consumed. Irrigation consumes 70% of the total fresh water suitable for human consumption. Appropriate management of natural resources, adequate disposal of toxic waste, as well as incentives for the economy and consumers to reduce waste and recycle it are necessary.

The thirteenth goal of sustainable development is related to the fight against climate change, because greenhouse gas emissions have increased by as much as 50% compared to 1990. The goal is to use 100 billion US dollars per year until 2020 to remedy the consequences of climate change and help, primarily underdeveloped countries, while increasing general information about global warming and improving strategies at the national level.

The fourteenth goal of sustainable development is related to the aquatic world, because there are 13,000 units of plastic waste per square kilometer in the oceans. Adequate management and protection of seas and oceans from terrestrial pollution is necessary, as well as exploitation of water resources that is in accordance with international law.

The fifteenth goal of sustainable development is related to life on land, as 12 million hectares of land are unusable as a result of drought. Also, almost a quarter of the 8,300 animal species are threatened with extinction. Adequate management of forest resources is necessary, as well as prevention of their clearing, and preservation of natural habitats and biodiversity is also necessary.

The sixteenth goal of sustainable development represents peace, justice and strong institutions, because stability and governance based on the rule of law are necessary for sustainable development. The key is the reduction of armed violence and crime, respect for human rights, as well as the presence of underdeveloped countries in governance institutions at the global level.

The seventeenth goal of sustainable development is related to cooperation towards the goal, i.e. improvement of global solidarity. From 2011 to 2014, aid from developed countries to less developed regions increased by 66%, primarily due to crises related to conflicts and climate change, but financial resources are still necessary. Helping underdeveloped countries to increase exports and repay debt, investments in least developed countries, as well as adequate international trade are necessary for sustainable development.

Even before the adoption of the 2030 Agenda, the Government of the Republic of
Serbia adopted documents concerning sustainable development. In the National Strategy for Sustainable Development of the Republic of Serbia, topics have been determined within which it is necessary to monitor the key indicators that lead to the improvement of the sustainable development of the country, and thus the preservation of the environment. These topics relate to reducing poverty, improving the efficiency of state administration and population policy, improving health and education, then topics related to economic development and international cooperation, and above all production and consumption.

The strategy also includes topics related to environmental protection, namely sensitivity to natural disasters, climate change, atmosphere, soil, water and biodiversity. Poverty reduction is achieved through the improvement of living conditions, social assistance to the population whose incomes are below the national poverty line, as well as the improvement of gender equality. Management in the field of state administration requires that the level of corruption and crime be determined through appropriate indicators, which can help to improve the efficiency of state institutions.

In the field of health care, it is important to improve the health of the entire population through appropriate indicators with the aim of increasing the expected years of life in good health. In the field of education, it is important to raise the level of literacy and the level of education of the population, and in order to increase the enrollment rate in both compulsory and higher levels of education, it is necessary to improve the population policy with the aim of increasing the total population. Within production and consumption, very important aspects are the use of energy, i.e. the share of renewable energy sources, as well as the amount of waste and its treatment.

In order to reduce the negative impact on the environment, it is necessary to constantly measure the indicators that affect climate change and damage to the ozone layer, as well as the measurement of pollutants in cities. It is also necessary to determine the value of indicators related to the improvement of agriculture and forestry in terms of reducing soil and forest degradation, as well as the uncontrolled use of fertilizers and pesticides. The improvement of environmental protection also depends on the improvement of ecosystems and care for water quality and savings in its consumption, as well as for wastewater treatment.

The national strategy for the sustainable use of natural resources also contains a national list of environmental protection indicators. Thematic units covered in this list are related to air quality and global warming, treatment of water, soil, forests and waste, biodiversity, noise, responsible hunting and fishing, efficient use of natural resources, activities of companies and the whole society in the field of environmental protection, international and domestic agreements and regulations, as well as the financial aspect in the field of environmental protection.

The main indicators within the mentioned topics are the emission of substances that damage the ozone layer, gases with a greenhouse effect, as well as heavy metals, water pollution, the amount and treatment of communal and hazardous waste, the negative impact of the production and consumption of electricity, mineral fertilizers and protective agents herbs.

Sustainable management of natural resources and environmental protection are carried out in accordance with the Law on Environmental Protection. This Law regulates the preservation of the environment in order to ensure the right of the population to a healthy environment and to regulate the impact of the economy on the environment:

- Article 21 refers to activities on the protection of natural resources with the aim of preserving the natural balance.
- Article 22 defines the sustainable use of land, and Article 23 defines the impact of water on the environment and the application of adequate treatment to reduce pollution.
- A complex system of measures maintains air quality, that is, reduces the level of pollution with constant monitoring of the amount of atmospheric emissions.
pollutants and the impact on the health of the population.
• According to Article 30, waste management refers to procedures in the collection, transportation, storage and recycling of waste.
• Article 39 establishes the permitted value levels of all pollutants and the control system.
• In accordance with Article 42, the Ministry has the obligation to inform the population in the event of an illegal level of pollution, based on the constant measurement of environmental indicators according to Article 70.

The Environmental Protection Agency of the Ministry of Environmental Protection of the Republic of Serbia carries out constant monitoring, data collection and annually issues reports on the state of the environment. Although a considerable amount of data is analyzed, it is rarely linked to a proven relationship with the health of the population. However, it was officially estimated that in 2015, there were 13,000 premature deaths in Serbia that were linked to excessive air pollution with PM2.5 particles, 860 with nitrogen dioxide pollution and 420 with ozone.

4. IDENTIFYING ENVIRONMENTAL INDICATORS FOR IMPROVING THE SUSTAINABLE COMPETITIVENESS OF ECONOMY OF THE REPUBLIC OF SERBIA

Environmental indicators can be divided into four categories of environmental impact, namely: human health, ecosystem quality, climate change and resources. Carcinogenic and non-carcinogenic substances, respirable inorganic particles, ionizing radiation, damage to the ozone layer and respirable organic particles have an impact on human health. Ecotoxicity, acidification and eutrophication of aquatic systems, as well as ecotoxicity, acidification and occupation of land affect the quality of ecosystems, and the potential of global warming to climate change. Cumulative energy demand and mineral extraction are related to resource.

Table 2. List of 15 environmental indicators for improving the sustainable competitiveness of the Republic of Serbia

<table>
<thead>
<tr>
<th>Ecological indicators</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenic substances</td>
<td>kg C2H3Cl-eq.</td>
</tr>
<tr>
<td>Non-carcinogenic substances</td>
<td>kg C2H3Cl-eq.</td>
</tr>
<tr>
<td>Respirable inorganic particles</td>
<td>kg PM2.5-eq.</td>
</tr>
<tr>
<td>Ionizing radiation</td>
<td>Bq C-14-eq.</td>
</tr>
<tr>
<td>Depletion of the ozone layer</td>
<td>kg CFC-11-eq.</td>
</tr>
<tr>
<td>Respirable organic particles</td>
<td>kg C2H4-eq.</td>
</tr>
<tr>
<td>Ecotoxicity of aquatic systems</td>
<td>kg TEG into water</td>
</tr>
<tr>
<td>Soil ecotoxicity</td>
<td>kg of TEG into the soil</td>
</tr>
<tr>
<td>Soil acidification</td>
<td>kg SO2-eq.</td>
</tr>
<tr>
<td>Land occupation</td>
<td>m2 of organic arable land-eq.</td>
</tr>
<tr>
<td>Acidification of aquatic systems</td>
<td>kg SO2-eq.</td>
</tr>
<tr>
<td>Eutrophication of aquatic systems</td>
<td>kg PO4^3- eq.-</td>
</tr>
<tr>
<td>Global warming potential</td>
<td>kg CO2-eq.</td>
</tr>
<tr>
<td>Cumulative energy demand</td>
<td>MJ</td>
</tr>
<tr>
<td>Mineral extraction</td>
<td>MJ</td>
</tr>
</tbody>
</table>

Table 2 shows the indicators with the usual units in which they are calculated. For practical reasons, the values of certain indicators are expressed in smaller units (g, mg, µg, cm², kJ).

5. THE IMPACT OF HOUSEHOLDS ON THE ENVIRONMENT

In our research, the aforementioned 15 ecological indicators significant for the improvement of sustainable competitiveness in the consumption segment were analyzed, based on the behavior of pork consumers in the Republic of Serbia. Given that relevant scientific journals most often publish research in the area of life cycle assessment of the production sector, and not the consumption sector of pork, we could only compare our results related to ozone depletion, global warming potential and cumulative energy demand with research that included evaluation of the life cycle of chicken meat in the part related to consumption, i.e. preparation and storage of meat, as well as disposal of waste in households in Serbia.
Regarding the first indicator of carcinogenic matter, our results varied in the observed households from 0.07 to 1.76 g C2H3Cl-eq. (g of chloroethylene in air-equiv.) primarily depending on the amount of biowaste per kilogram of pork meat.

In terms of non-carcinogenic substances, the results varied in the observed households from 0.47 to 11.90 g C2H3Cl-eq. (g of chloroethylene in air-equiv.) primarily depending on the amount of biowaste per kilogram of pork meat.

Regarding respirable inorganic particles, the results varied in the observed households from 0.005 to 1.63 g PM2.5-eq. (g of particulate matter with a diameter of less than 2.5 micrometers in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork meat.

The values for ionizing radiation varied in the observed households from 0.01 to 55.80 Bq C-14-eq. (Bq carbon-14 in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork meat.

In terms of damage to the ozone layer, the results varied in the observed households from 0.25 to 508.00 µg CFC-11-eq. (µg CFC-11 in the air-eq.) primarily depending on the consumption of electricity per kilogram of pork meat.

The results can be compared with the research that included the assessment of the life cycle of the preparation and storage of chicken meat and waste disposal in households in Serbia, in which the values of the ozone layer damage indicator varied in the observed households from 0.32 to 318.00 µg CFC-11 233 (average value 91.01 µg CFC-11), while the lower average value for chicken meat can be explained by the necessity of longer preparation of pork meat compared to chicken.

For respirable organic particles, the results varied in the observed households from 0.79 to 137.00 mg C2H4-eq. (mg of ethylene in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork meat.

Regarding the ecotoxicity of aquatic systems, the results varied in the observed households from 0.18 to 5.05 kg of TEG in water (kg of triethylene glycol in water-equiv.), primarily depending on the amount of biowaste per kilogram of pork meat.

Regarding the ecotoxicity of the soil, the results varied in the observed households from 0.04 to 2.11 kg of TEG in the soil (kg of triethylene glycol in the soil-equiv.), primarily depending on the consumption of electricity per kilogram of pork meat.

Regarding soil acidification, the results varied in the observed households from 0.14 to 30.80 g SO2-eq. (g SO2 in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork.

The results for land occupation varied in the observed households from 0.14 to 4.19 cm2 of organic arable land-eq. primarily depending on the amount of biowaste per kilogram of pork.

Regarding the acidification of aquatic systems, the results varied in the observed households from 0.02 to 13.60 g SO2-eq. (g SO2 in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork.

The results for global warming potential varied in the observed households from 0.003 to 1.93 kg CO2-eq. (kg CO2 in air-equiv.) primarily depending on the consumption of electricity per kilogram of pork.

The results are comparable to the research that included the assessment of the life cycle of preparation and storage of chicken meat and waste disposal in households in Serbia, in which the results in terms of global warming potential varied in the observed households from 0.12 to 1.19 kg CO2-eq. (average value 0.35 kg CO2-eq)234. The difference in average global warming potential values can be explained by the specifics of the preparation of these two types of meat.

For cumulative energy demand, the results varied in the observed households from 0.03 to 37.10 MJ (kg of crude oil-equiv.), primarily depending on the amount of biowaste per kilogram of pork meat.
depending on the consumption of electricity per kilogram of pork meat. The results can be compared with the research that included the assessment of the life cycle of the preparation and storage of chicken meat and waste disposal in households in Serbia, in which the results in terms of cumulative energy demand were lower and varied in the observed households from 1.77 to 23.2 MJ (average value 6.65 MJ)235, which can be explained by the difference in the time of preparation and storage of these two types of meat.

In terms of mineral extraction, the results varied in the observed households from 0.05 to 1.24 kJ (g iron-equiv.), primarily depending on the amount of biowaste per kilogram of pork meat.

6. ANALYZE THE RESULT

In our research, electricity consumption carries the highest environmental burden for nine indicators, namely for respirable inorganic particles, ionizing radiation, damage to the ozone layer, respirable organic particles, ecotoxicity and soil acidification, acidification of aquatic systems, global warming potential and cumulative energy demand. The amount of biowaste to the greatest extent determines carcinogenic and non-carcinogenic substances, ecotoxicity of aquatic systems, mineral extraction, and completely determines land occupation, while the amount of wastewater bears the greatest burden for eutrophication of aquatic systems.

For the presented results obtained on the impact of pork consumption on the environment, it can be said that they are comparable to the results of the authors who studied chicken meat, bearing in mind the specificities of these two types of meat. The results were higher than the results for chicken meat for the ozone depletion indicator by 47.90%, the global warming potential by 45.71% and the cumulative energy demand by 48.12%.

Households with four or more members were dominant for the indicators that are most affected by electricity due to the significant use of larger, relatively old freezers that are large consumers of electricity, as well as energy-inefficient stoves.

Single-member households had the greatest impact on the environment in the domain of indicators for which the amount of biowaste was decisive, as well as for the indicator that was most influenced by the amount of wastewater.

7. RECOMMENDATIONS FOR REDUCING ENVIRONMENTAL IMPACT

Recommendations for minimizing the impact of pork consumption on the environment in the Republic of Serbia can be viewed in three directions.

The first direction refers to the use of electricity, since it had the greatest environmental impact among surveyed households in Serbia. Recommendations for the rational consumption of electricity in the household relate primarily to the characteristics of the devices that should be used for the preparation and storage of pork meat. The size of the device should be in accordance with the number of household members and the frequency of use of these devices. It goes without saying that the most energy-efficient devices should be used in order to achieve the greatest possible energy savings. The energy efficiency mark on devices provides information to the consumer about the level of energy consumption, i.e. about the class of its energy efficiency.

All technical brochures about the device, in printed or electronic form, must be in the Serbian language and must contain all the technical characteristics of the device, including energy consumption, which is regulated by the corresponding legal regulations.

The actions of users of electrical appliances during the preparation and storage of food are also important for saving energy. When using the stove, it should be borne in mind that the dishes for food preparation must be of adequate size, that is, in accordance with the
The diameter of the heating plate, which should be turned off before the end of cooking in order to use the accumulated energy (the latter does not apply to the induction plate). Also, the oven should be turned off before the end of food preparation, because a certain amount of energy accumulates in it. Using the lid on the pot speeds up the preparation of food.

To save energy when preparing food, it is recommended to use a so-called pressure cooker, because it prepares food many times faster than in ordinary dishes. Energy can also be saved by using a stove with an induction plate, since only the surface covered by the dishes is heated. The position of the refrigerator and freezer determines the time to achieve optimal working temperatures, i.e. they should not be placed near a heat source, such as a stove or oven (radiator).

Food containers must not be warm when placed in the refrigerator and must be covered to reduce humidity inside the refrigerator. Refrigerator doors must have proper seals and should not be opened frequently. Older types of refrigerators require regular de-icing. It is recommended to replace old refrigerators with the latest types that do not create ice, and which require significantly less electricity to operate. Pork, like other foods, should be kept in the refrigerator for as short a time as possible and, if possible, avoid freezing, which would also achieve significant energy savings.

The research showed that another way to minimize the impact on the environment should be to reduce the amount of waste, primarily biowaste when using pork meat in households, as well as efficient waste management.

In terms of the amount of municipal waste per population, Serbia is at the bottom of the list of European countries. The average amount of waste in the European Union per capita is 487 kilograms of waste, while in Serbia there are 306 kilograms of waste per capita. However, in Serbia, most of the waste is disposed of in landfills, and a very small percentage of waste is recycled. In the European Union, only 24% of municipal waste is stored in landfills, while for Serbia this percentage is significantly higher and amounts to 84%.

In order for Serbia to meet European Union standards related to environmental protection, it is estimated that around 15 billion euros are needed, and that amount includes the establishment of a large number of centers for the use of waste as a resource. Since this is a strategic goal for the next period, the responsibility for this is at the state level, at the municipal level, as well as at the level of each household, in terms of reducing waste and using packaging as rationally as possible, sorting waste and throwing it in an appropriate place.

Reducing the amount of biowaste from pork is possible in two ways - by increasing the share of boneless pork in household consumption and by reducing the amount of this meat that is thrown away. If consumers were offered boneless pork meat at prices acceptable to them to a greater extent, the amount of biowaste in households would be reduced, and thus the slaughterhouse industry could use the waste, i.e. increase the production of meat and bone meal, which is used as organic fertilizer and ingredient in pet mixes.

According to data from 2019, about 14% of food worth about 400 billion US dollars is thrown away in the world. The UN Sustainable Development Agenda proclaimed the goal of reducing food losses in retail and households by 50% by 2030.

According to research on food waste in households in Serbia, 247,000 tons of food are thrown away every year, which represents 35 kg per year per capita, of which 7.18 kg is meat. According to the responses of consumers, food is thrown away when it spoils (67%), when it has been standing for a long time (17%) or when they consider it to be unsafe (11%). The value of wasted food per inhabitant is about 10,000 dinars. According to the responses of consumers, food is thrown away when it spoils (67%), when it has been standing for a long time (17%) or when they consider it to be unsafe (11%). The value of wasted food per inhabitant is about 10,000 dinars. When these data are transferred to our research, which included 500 households, it can be concluded that 18.20% of households lose about 10,000 dinars annually, 45.00% of households between 20,000 and 30,000 dinars, and 36.60% even RSD 40,000 or more.
Reducing the impact on the environment, i.e. energy saving, waste treatment and food waste depend to a large extent on consumer behavior. In order to improve the attitudes and opinions of consumers, i.e. their awareness of the necessity of minimizing the impact on the environment, continuous education of the population, consistent application of existing and adoption of new appropriate legal regulations, making changes to the educational process, which all together represent the third direction of activities for minimizing the impact on the environment, and thus and the influence of pork consumer behavior, which is the subject of our research.

Along with the application of the principles of environmental protection, the laws of the Republic of Serbia regulate, on the one hand, the rules of efficient use of energy, and on the other hand, adequate waste management.

In order to increase the competitiveness of the economy, the law on efficient use of energy emphasizes the responsible use of energy and the security of supply, as well as the reduction of the negative impact of energy on the environment through the implementation of the principles of energy efficiency both in the field of production, transmission and distribution, as well as in consumption. energy, and it is applied not only to the public sector and economic companies, but also to households.

The Law on Waste Management is based on ensuring the conditions for waste management, without endangering human health and the environment, and with special emphasis on the importance of waste prevention. Waste management plans are adopted at the regional and local level, and refer to both the obligations of local self-governments and the obligations of households.

Both of these laws include the adoption of a program of measures and procedures for prevention and raising the population’s awareness of the necessity of adequate behavior in the field of sustainable development.

Apart from the measures implemented by the state in order to secure investments in projects for environmental protection in Serbia, which relate to the construction of centers for the treatment of municipal and hazardous waste and the purification of waste water, it is clear that it is necessary to ensure that the awareness of the population, i.e. consumers, is raised about the necessity reduction of negative impacts on the environment, which can be achieved through the following measures through a unique state program:

- Introduction of ecology as a compulsory subject in all grades of primary and secondary schools, since now very few students are included in environmental education.
- Introduction of environmental content into children's activities in childcare institutions from the age of three.
- Implementation of a campaign on the connection between sustainable development, competitiveness of the economy and social progress in all means of public information, which would be organized at the level of the entire country.
- Holding courses on sustainable development in work organizations that would be organized at the local self-government level.
- Introduction of environmental protection information programs for the non-working population (unemployed, pensioners, students) through appropriate local self-government bodies and universities.
- Introduction of a program of financial support for the population in the purchase of energy-efficient devices.
- Regular delivery of practical instructions (on saving electricity, sorting waste, etc.) to households throughout the territory of Serbia (for example, on the back of utility bills).

The implementation of the aforementioned recommendations would certainly improve the sustainable use of natural resources through efficient and economical use of energy, reduction of the amount of waste and its recycling. Our research has shown that these are the two basic aspects that influence sustainable development at the level of households, i.e. consumers.
8. CONCLUSION

Sustainable development has become the basis on which the progress of every country and company, as well as every individual, is based, which can develop smoothly only in a preserved natural environment. The importance of the principles of sustainable development at the global level is evidenced by the United Nations Agenda 2030 for the responsible use of natural resources and the provision of a healthy environment for the benefit of all humanity. The proclaimed goals of this Agenda refer, above all, to the eradication of poverty along with economic development, raising the level of health, environmental protection and education, as well as the fight against climate change. In accordance with the position, proclaimed in the documents of the United Nations, that sustainable development aims to meet current needs, but with the preservation of resources for future generations, the World Economic Forum develops the concept of sustainable competitiveness, where the emphasis is placed on productivity, which is the driver of prosperity and long-term growth. Thus, sustainable competitiveness is defined as a set of regulations that make the national economy productive over a long period while ensuring the sustainability of society and the environment. The sustainability of society means that institutions and regulations enable all residents to have the best health and safety and to increase their potential, as well as to contribute to the economic prosperity of the country in which they live. Environmental sustainability implies the existence of institutions and regulations that ensure efficient management of resources and creation of prosperity for current and future generations. The essence of sustainable competitiveness is to determine not only whether the country has the potential for development in the medium and long term, but also whether the development process contributes to the creation of a prosperous society.

REFERENCES


