THE CURRENT STATE OF EUROPE'S ENVIRONMENTAL BURDEN DUE TO THE EMERGENCE OF A CIRCULAR ECONOMY

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ABSTRACT

The aim of this article is to point out the tools and means used to improve circular economy in Slovakia and the European Union and at the same time to present possible variants of processing and reuse of products that are at the end of their life cycle.

The first part focuses on the emergence and gradual transition from environmental policy to the circular economy. With the help of legislative initiatives of the European Union, it is possible to reduce and prevent extreme pollution of the air, water, earth. Environmental policy instruments that help to achieve the goal of environmental protection. It is feasible to set up the daily functioning of the whole society with minimal environmental pollution.

This article deals with the modern direction, namely the circular economy called the circular economy. The given topic has recently been heard not only in the media, schools, state institutions, but also on social networks. The elaboration of this topic resulted from the topicality and the very expansion of the topic at present and the wide-ranging information of the public. It is important to note that in initiatives and promotion of the circular economy, there is an appropriate selection of literature, data and statistics.

Keywords: Economy, Environment, European Union, Initiative, Circular Economy, Slovak Republic.

The introduction

The development of environmental policy in the field of the European Community (European Union) is determined as the development of a policy that has developed in its entirety and has not been a fundamental intention of the European Communities from the very beginning. Powers in the given area were concentrated mainly at the national level. The intention to transfer powers to the EU was only shown subsequently, as indicated by the absence of the concept of environmental policy directly in the initial agreements. The European Union operates on a transnational basis, where a Member State relinquishes part of its powers and entrusts them to the institutions of the European Union. [1].

Ecological economics comes as a direction of economic theory, which is preferred by the author Nicolas Georgescu-Roegen, who became the main founder of this direction in the early 1970s. His successors were Tom Tietenberg and Herman E. Daly (2000). It is the ecological economy that applies the closure of the final structure (Earth) with the adoption of the first law of thermodynamics, which gives the basis that neither matter nor energy itself can be produced, it can only be transformed. The quantity of material streams flowing from the environment into the production system must therefore accumulate or return to the environment in the form of waste. If the cycle is suspended, the volume of material flows flowing into the economic structure is equal to

the number of wastes entering the environment (the extent of waste is determined by the disposition of ecosystems to receive waste). The continuation of these currents of thought can be clearly seen even today. [2].

The focus of sustainable development (Sabo et al., 1999) lies in finding balance, proportionality of economic prosperity, taking into account the integrity and diversity of the environment, along with growth and maintaining the quality of life of the individual and society as a whole. If the environmental aspect is taken into account, these are preconditions for the rational and environmentally friendly use of natural resources, possibly in terms of soil quantity and fertility, water and air quality, nature's disposition to absorb waste or preserve biologically diverse spectrum. A sustainable society recognizes the limitations of the use of natural resources, the fair distribution of benefits from the resources provided and the search for qualitatively new directions of prosperity. [3]

The analysis of the circular economy

The economy of circulation, also called the economy of circulation, is a new economic type set on the principle of returning substances, their parts, and products back to the production run. Circulation will ensure a sharp reduction in waste, lower energy consumption that would be necessary to re-produce new starting materials and minimize the total cost of production.

This is the most economical use of sources of materials in the technical and biological process. It means the closure of material flows of goods, that is, the continuous change of production outputs into inputs for further use. The purpose of the circular economy is therefore the greatest achievable usability and utility of products and their components, as well as the lowest possible burden on the environment.

With the help of its own ecological, technical, and equally economical capacity of the circular economy, it is growing rapidly in popularity and is increasingly realistic indicating the possibility of the departure of the linear economy. [4].

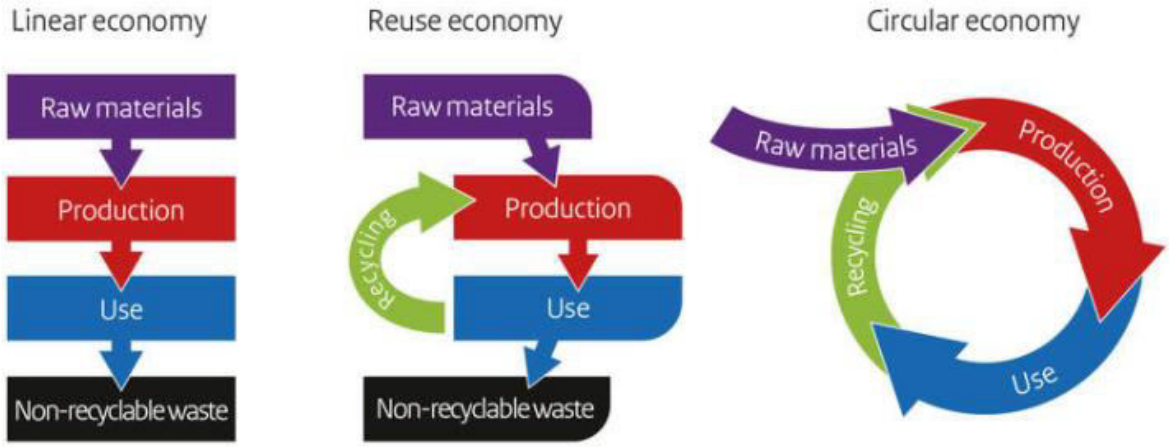

Figure 1. From linear economy to a circular economy [Source: 8].

As can be seen in the Figure 1, the circular economy is created by a smooth transition from a linear economy through a reuse economy to a circular economy. It is clear that the optimization of the production processes, compliance with legislative measures, the overall use of resources and the minimum generation of waste will take on a new dimension in the circular economy.

The objective

The main aim of the article is to create a relevant picture of the current state of Europe's environmental burden. Selected areas are areas where it is possible to have the greatest impact on sustainable development and the introduction of the circular economy into the daily lives of people, business units and public administration. Specific areas are traffic air pollution, the state of bathing water, extreme weather changes, droughts.

The results

EU transport policy 2030-2050 in relation to air quality

Air pollution from transport is also discussed in the EU White Paper on Transport. The European Union has called for a significant reduction in global greenhouse gas emissions. To achieve this, the EU must generally reduce emissions by 80-95% below 1990 levels by 2050. The Commission's analysis shows that while more significant reductions can be achieved in different sectors of the economy, the transport sector is required to reduce by 2050. greenhouse gas emissions by at least 60% compared to 1990. This corresponds to a decrease in emissions of around 70% below the level of 2008. In particular by 2030, the transport sector will aim to reduce greenhouse gas emissions by around 20% below the level of 2008. New technologies for vehicles and traffic management will be crucial in the EU as well as elsewhere in the world to achieve reductions in transport emissions [5].

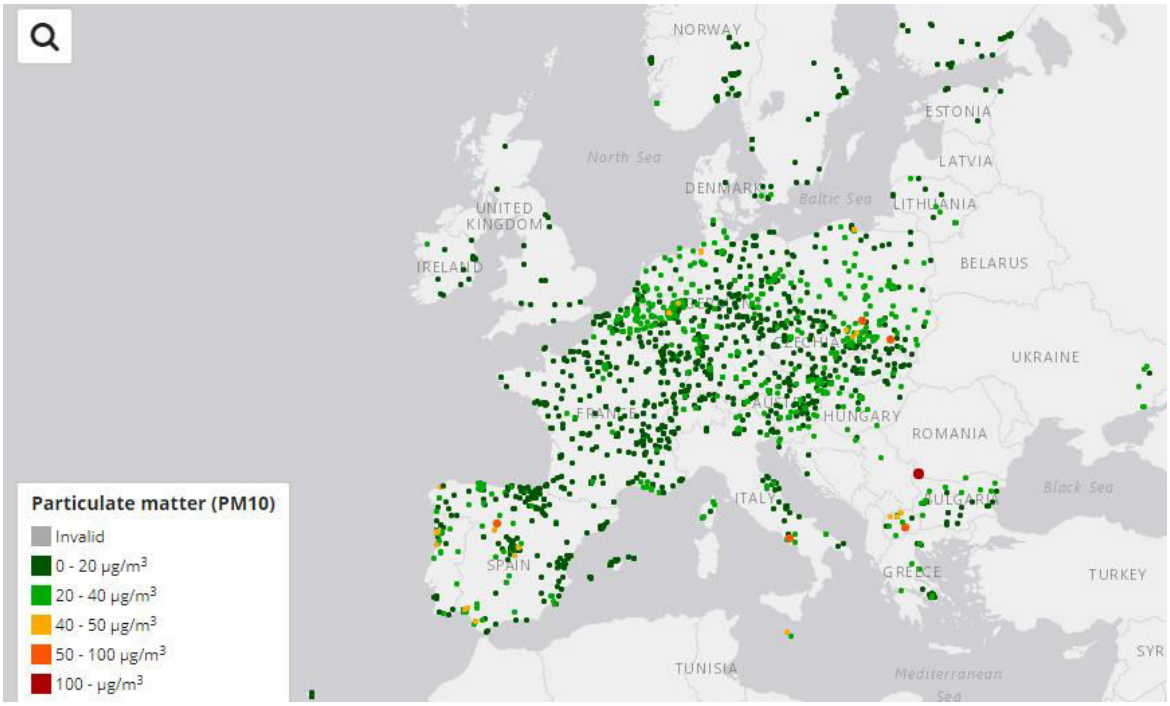

Figure 2. EU air quality indicator as of 20.9.2018 [Source: 6].

Status of bathing waters in 2019

Figure 2 shows the bathing water locations and their quality for both the last and previous bathing seasons. All symbols are colored based on the achieved quality status in the last season. Data are presented in scales.

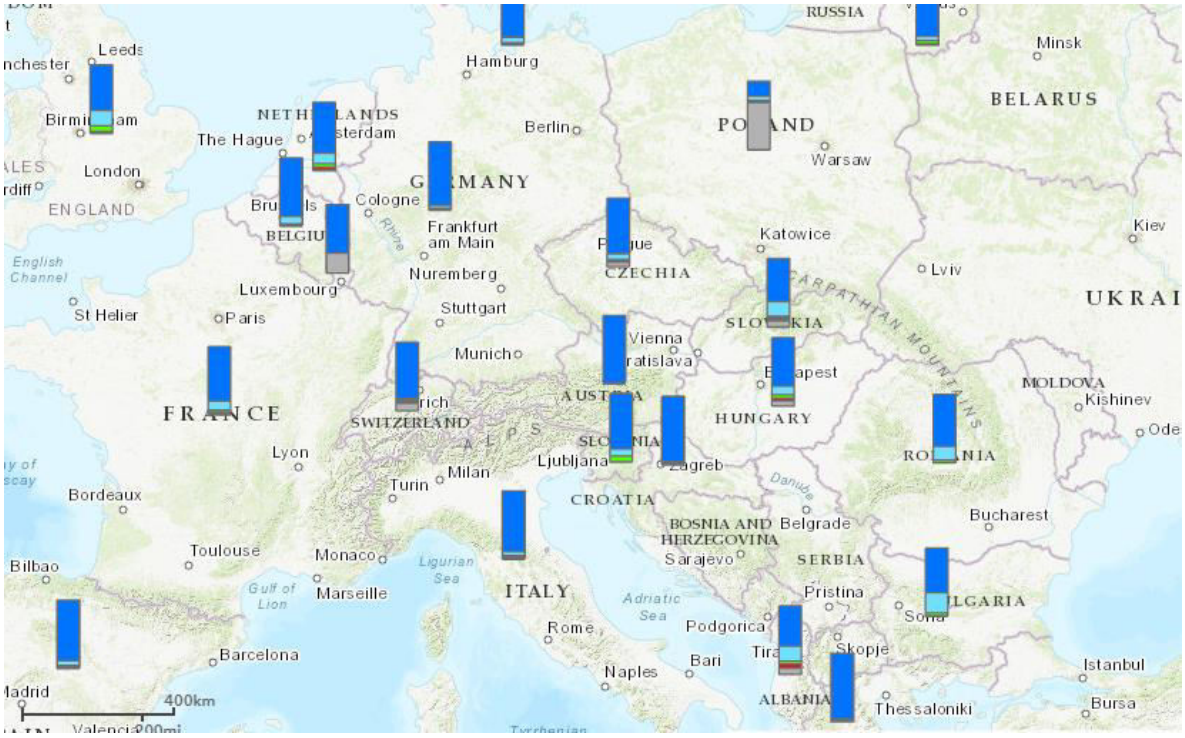

Figure 3. State of bathing waters in 2019 [Source: 7].

The number of bathing waters in 2019 was 22,295 places. At least sufficient quality reaches 94.9% of water reservoirs and excellent quality was 84.64% of water (dark blue color). Subsequently, 7.89% has good water quality (pale blue color), gray color shows places that cannot be classified (not classified) 3.76%. The red color indicates poor 1.36% and the green color

represents sufficient 2.35%.

Figure 4. Bathing water quality in 2019 [Source: 7].

Long-term climate change is happening now, it has been in the past, but it will be more serious in the future, even if global efforts to reduce greenhouse gas emissions prove effective. If efforts to reduce emissions are successful in keeping global temperature increases well below 2 ° C (as required by the Paris Agreement), then the effects will be much less severe. Any scenario with higher emissions would lead to significantly greater climate change.

Extreme risks related to weather and climate, such as heat waves, floods, and droughts, will become more frequent and intense in many regions. This effect will have an adverse effect on ecosystems, economic sectors and human health and well-being. For this reason, minimizing the risks posed by global climate change requires, in addition to measures to reduce greenhouse gas emissions, targeted measures to adapt to the effects of climate change. The specific adaptation must be linked to the individual circumstances in the various regions and cities of Europe.

Expected changes in the frequency of meteorological periods of drought

Available studies predict an increase in the frequency, duration, and severity of meteorological as well as hydrological droughts for most of Europe during the 21st century, except for parts of northern Europe. The most widespread drought is expected in southern Europe, where competition between water users such as agriculture, industry, tourism, and households will increase. Farms in southern Europe could suffer significant drought losses by 2100. [9].

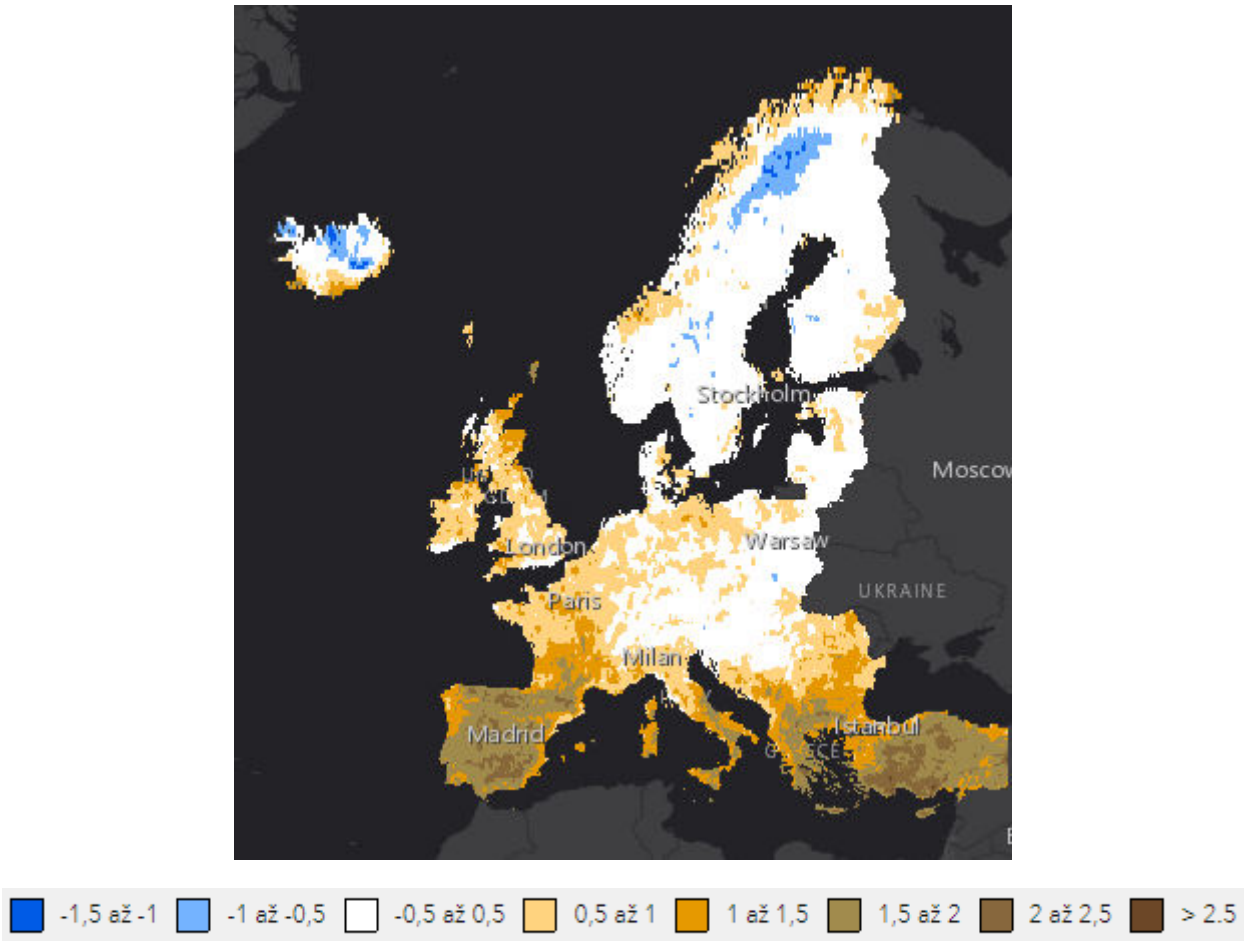

Figure 5. Drought period for the high emissions scenario [Source: 9].

It is shown in Figure 4 the expected change in drought meteorological periods for the high emissions scenario (period 2041 - 2070 compared to 1981 - 2010) is shown in Figure 4. The change in the number of drought events over 30 years is shown. A drought event is defined when the standardized precipitation index (SPI-3) is less than -1.

The conclusions

Thus, the analysis of the current status of circular economy shows that at present, the issue of the circular economy (in previous decades perceived by the authors as the return of resources to circulation or back to nature) is a sufficient number of resources, mainly in the form of electronic articles, websites or brochures published by various organizations, from European Union directives.

regulations of the Ministry of the Environment to articles published by voluntary organizations, which draw attention to the importance of knowing this topic. Foreign literature is similarly accessible in the form of electronic sources.

Current Slovak publications in book form are to a greater extent accessible in the form of scripts of universities, which have departments focused on ecology, environment, environmental economics. The book version is regularly published in the proceedings of the Slovak Society for the Environment in Bratislava, entitled Tools of Environmental Policy 2017.

I do not consider the lack of book materials in the field of circular economy to be a problem, because the basis of sustainable development, environmental economics and management can be analyzed from a large number of books of Slovak and foreign character between 2000 - 2016. Since 2017, electronic form of data and information predominates. The advantage is the availability on the Internet, which can be used by large masses not only directly involved.

The area of production phases is to improve the design of products so that they are more durable, stronger, and their repair is easier, better modernized or repairable. It is also about setting up more efficient production controls for substances that can be recycled and can be brought back into the economy as new. These are so-called secondary raw materials, which will, among other things, ensure a decrease in the use of valuable primary materials. It is feasible both to prevent the generation of a considerable amount of waste, also to reduce the overall burden on nature, as well as to mitigate the impact of climate change in Europe.

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