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EUROPEAN CIRCULAR ECONOMY – A REAL MODEL FOR THE SUSTAINABLE DEVELOPMENT OF THE ECONOMY OF THE REPUBLIC OF MOLDOVA

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Abstract
The actuality of this study is to identify the most effective ways to overcome the resource deficit, in order to reduce the pressure on the environment, ensure sustainable economic growth and improve the living standards of the population. By analyzing the postulates underlying the development of the circular economy from an European perspective, there is outlined the aim to identify the best possibilities for their application in the national economy of the Republic of Moldova, so that it was possible to highlight certain solutions in overcoming impediments in the researched field, some of which are: moderate use of resources, socially responsible consumption, waste-free production, design of organic products and their reuse. Adopting the principles of the circular economy and developing related innovative business models, introducing new closed-cycle production technologies such as the donut model, involve not only timely and consistent modernization of legal regulation in the country and the creation of appropriate framework conditions for business, but also require new qualitative approaches of economic entities.

Key words: *circular economy; globalization; sustainable development; green economy; sustainability; environmental protection*

JEL Classification: *F01; F6; F64; Q0; Q01; Q56*

I. INTRODUCTION

The current aspirations of modern civilization in search of the best ways to achieve human well-being and strengthen social equity by simultaneously reducing environmental risks and the deficit of natural resources, eminently require the development of the circular economy in terms of sustainability and durability. This new paradigm of economic development includes the principles of moderate use, waste-free production, design of organic products and their reuse in order to minimize pressure on the environment, ensure sustainable economic growth and improve the living standards of the population.

Achieving economic growth and harmonious coordination of the components of sustainable development capable of ensuring long-term social stability and ecological balance can be achieved through a new economy. Thus, in the context of the implementation of the postulates of the World Environment Conference in Rio de Janeiro in 1992 with regard to the course towards a sustainable economy, which provided for balancing economic growth and environmental protection through the use of alternative resources, the European Commission in late 2015, introduced and defined a new development vector – the circular economy – a generic term used in the case of the industrial economy involving a production and consumption model that supposes sharing, reusing, repairing, renovating and recycling existing materials and products as much as possible.

The transition from the traditional model of economic growth to growth based on environmental protection is becoming a global trend, in which the green economy acts as a tool for sustainable development, because a wide public resonance in the world is caused by a serious threat to the future of the planet in terms of production and consumption that do not take into account the intact preservation of the environment. This fact is also confirmed by estimating the vertiginous growth of population. Thus, according to the "Perspectives for population growth in the world" UN report (2015), the planet's population is 7.4 billion, but by 2030 this number may reach 8.3 billion, and by 2050 – will reach 9.7 billion (United Nations, 2015).

Currently, most countries in the world are characterized by the linear model of economic development, based on the principle "take, make, waste". This model has caused a huge deficit of energy resources, intensification of environmental pollution, increasing the area of industrial and household waste landfills, etc. The new challenges are to ensure a dignified quality of life for all the inhabitants of the planet in the context of the growing volume of

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production and consumption, but at the same time in conditions of diminishing reserves of natural resources. We are the supporters of researchers who mention that some non-renewable energy resources, certain metals and minerals will not be able to meet demand in the future, even if consumption and production will remain at the same level, not to mention growth. Scientists note that some resources will be completely depleted in 50 to 100 years (Zhang, Badurdeen, Rouch & Jawahir, 2013: 194-199).

For this reason, it becomes appropriate to rethink the traditional economic model, including for the Republic of Moldova, and it is necessary to pay more and more attention to the concept of circular economy based on the principle "take, make, reuse". The transition to this model of economic development has certain benefits, such as: reducing environmental pressure, improving security of supply of raw materials, increasing competitiveness, stimulating innovation, stimulating economic growth, creating job places, while consumers will benefit from innovative products, which will increase their quality of life and help them save money in the long run.

II. MATERIALS AND METHODS

In order to carry out this research, European policy documents have been consulted. In particular, European legislation will be analyzed to identify how developed economies treat the formation of a new economic model, and what Moldova can take from the governments of developed countries to reform legislation and macroeconomic vision of the state, especially in the implementation of programs and projects to support the development of the circular economy.

We also note that in the present study an extensive methodological tool has been used, which included graphical and tabular methods, economic, statistical methods, synthesis, induction, deduction, comparative analysis and predictive analysis, etc.

III. RESULTS

In this context, the conceptual delimitation of notions of circular economy, green economy and sustainable development is required. Thus, we subscribe under the observation that "the achievement of a circular economy, which should be harmoniously combined with a green growth, brings to the fore the need to implement a sustainable approach at the level of economic activities. The circular economy is a component part of sustainable development, bringing to the fore the need to optimize resource consumption to prevent, reduce waste and promote reuse" (Tartiu, Stefanescu, Petrache & Gurau, 2019: 26).

Based on bibliographic research, we find that, without change, the linear consumption leads to stagnation, and in a system where profit is still produced, things have a natural tendency to stagnate. In this context, the circular economy is one of the areas of the green economy that offers both the state and the business environment modern approaches to improving resource efficiency, achieving the social effect in the consumption of goods, especially through extended producer responsibility, and reducing the ecological footprint of production and manufactured products. For example, experts from the Product-Life Institute, Geneva, argue that the linear economy, based on the principle of "take-make and dispose", being a legacy from the nineteenth century to the reality of the twenty-first century, requires the orientation towards a circular economy – a regenerative model based on feedback-rich flows, allied with new business models (Webster, 2015).

So, the circular economy represents a new paradigm, an economic circuit in which, from the design phase, everything is designed in such a way that what enters a product or process, falls into two categories: either it is a biodegradable component, or it is a component with 100% recycling potential, while the linear economy, however, is based on large amounts of cheap, easily accessible materials and energy. When a product reaches the end of its life, the materials from which it is made are kept in the economy whenever possible. They can be used again and again, thus creating additional value.

Today, the circular economy is becoming an irreversible global trend, which through its concept strongly advocates the implementation of a green economy and provides efficient business models to ensure more sustainable use of resources, helping to achieve the goals of sustainable development of society. This new type of economic activity aims to move away from the direct vector of economic growth based on the volume of used resources, gradually moving from depletion – to the regenerative use of materials. This is made possible by optimizing the use of existing assets, stocks and materials, i.e. by reducing the amount of consumed raw materials and by reducing the volume of generated waste (George, Brian & Chain, 2015: 60-63; Murray, Skene & Haynes, 2017: 369-380).

The circular economy involves a closed loop, a different system of perception of any human action: thinking, consumption habits, production and a more rational use. It should be noted that in the national strategies for sustainable development of certain countries, the ecological component is mentioned indispensable of economic growth, and the solution of the tasks of greening economic growth is assumed in the implementation of the concept of circular

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economy. This concept, more and more often, lately, is overlaid with the donut model, a model of quality of life, developed by a researcher from Oxford University. Thus, Kate Raworth, British economist at Oxford University, in "Doughnut Economics", demonstrated that one can live well without destroying the planet (Raworth, 2018). It offers an antidote to the neoliberal economy – an ambitious vision for a business servile to ecology. "Donut" is an image of prosperity, a radically new way of managing global development, a standard of economic success.

The Donut model was conceived as a guide for achieving prosperity defined in the sense of the balance between man and his environment, which can be applied at the level of cities, countries or by each person in his living environment. According to the author, the overall goal of economic activity should be "to meet the needs of all citizens of the world within the capabilities of the planet". Instead of economies that focus on growth, regardless of whether it leads to prosperity for citizens or not, there is a need for economies that "ensure prosperity, whether they grow or not" (Raworth, 2018). This approach requires a transformation of economic thinking in the light of the realities of the 21st century.

Today, when the growing epidemiological disaster weakens the world economy, even developed countries are looking for a new approach to economic reality, so that the philosophy of the circular economy is turning the world's attention. Many countries, including Germany, the Netherlands, Japan, China, are actively implementing government policies to develop a circular economy. The transition to this economic model involves a multidimensional approach, new technologies, financing and ways of doing business, the willingness of society as a whole to change its habits and create new models of interaction.

In this context, the Amsterdam administration recently ticked off a partnership with the Oxford University Institute for Environmental Change to rebuild the post-pandemic city, so that a sustainable balance between local economic needs and the environment is achieved. As we have noted, the model is designed as an alternative to the growth-based economy according to market supply-demand dynamics.

Amsterdam, in adopting this model for its post-coronavirus rebuilding plan, wants to be able to straddle both these rings – to make the city a place where people can thrive and the well-being of the planet is maintained. Commissioned by the city government, Circular Economy Amsterdam is now leading the charge to help create strategies to close the loops in all sectors of the economy, from plans to become a carbon-neutral economy to ensuring that all produced materials do not end up in landfills (see https://greenqueen.com.hk/sustainable-doughnut-economics-to-lead-amsterdams-post-pandemic-recovery). Its application depends on the local situation of each city, and Amsterdam is the first European city to undertake such a measure of sustainability of life as a way to recover from the pandemic. The model is one of "donut" prosperity and has aroused the interest of the European Commission.

Thus, with reference to the donut model, we note that the inner ring of the donut refers to the minimum standards of quality of life, in accordance with the objectives of sustainable development of the UN globally agreed, from food and drinking water to decent housing, sewerage, electricity, education, public health systems, gender equality and civil rights. The exterior of the donut forms the ecological lining and represents all those limiting conditions that ensure the protection of the climate, soil, oceans, ozone layer, drinking water and biodiversity. The full interior of the donut is the nourishing dough for both the environment and the human being: this is the area where the needs of both are equally met. Instead, the donut hole is a failure to meet minimum quality of life standards. The central premise of the model is that economic activities must take into account an increase in the quality of life for all within the limits of the natural environment.

The circular economy aims, first of all, to restore the initial value of the products at the end of their use in order to ensure economic efficiency. Secondly, it involves reducing the negative impact on the environment through activities to restore this initial value, which leads to meeting the social, economic and environmental requirements of sustainable development. The result of the introduction of the concept of economic growth based on the principles of environmental conservation should be based on responsible business conduct, which involves the introduction of programs and mechanisms for increasing resource efficiency, based on the available technologies of the economic entity. Their strong point must be socially responsible consumption, which implies a change in a person's opinions, thinking and values in relation to nature.

IV. DISCUSSION

In this regard, we note that the implementation of the 2030 Agenda for Sustainable Development of the United Nations, adopted on September 25, 2015, sets a global framework for achieving sustainable development by 2030. It includes an ambitious set of 17 Sustainable Development Goals (SDGs) for the sustainable economy. In particular, we would like to highlight the goal of sustainable development no. 12, which brings to the fore the need for the integrated promotion of environmental, social and economic elements. In 2015, the EU adopted a "Circular economy package" aimed at amending regulations on waste management, including measures on building sustainability, environmental protection, etc. In this context, the EU's Research and Innovation Program – Horizon 2020, has been

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adopted, which is the largest program in the world to promote cooperation in science, technology and innovation, both inside and outside the Union.

In March 2019, the European Commission published a comprehensive report on the implementation of the Circular Economy Action Plan, which was adopted in December 2015. The report presents the main results of the implementation of the Action Plan and outlines the unresolved challenges concerning the preparation of the ground for a climate-neutral and competitive circular economy, in which the pressure on natural and freshwater resources, as well as on ecosystems, is kept to a minimum.

According to the report, the implementation of the Circular Economy Action Plan has accelerated the transition to a circular economy in Europe, which in turn, has helped to bring the EU back on the path to job creation. In 2016, the sectors relevant to the circular economy employed more than four million workers, an increase of 6% compared to 2012. Circularity also opened up new business opportunities, led to the emergence of new business models and has developed new markets, both domestically and outside the EU. In 2016, circular activities, such as repair, reuse or recycling, generated an added value of almost 147 billion EUR, while the value of investments was approximately 17.5 billion EUR (European Comission, 2019).

We consider that the emerging aspects of the circular economy represent new opportunities for the development of sustainable production and consumption models also for the Republic of Moldova. Adopting the principles of a circular economy, developing related innovative business models, introducing new closed-cycle production technologies such as the donut model, involve not only timely and consistent modernization of legal regulations in the country and the creation of conditions -appropriate framework for business, but also require new qualitative approaches from economic entities.

On the other hand, the development of a similar model in the national economy of the Republic of Moldova currently faces considerable obstacles and barriers, including lack of advanced technologies and equipment for efficient reuse, valorization and recycling of waste, low innovation activity in developing BAT – the best available technology, the lack of an education and training system for waste recycling industries, as well as the underdevelopment of environmental awareness in consumers. The transition process towards the implementation of the circular economy (green economy) in the country requires the provision of norms and standards, methodologies on different types of waste and labor specialization, as well as defining the need for funding for public policy recommendations in the field.

It should be noted that in the Republic of Moldova, senior management considers that circular economy is more difficult to be implemented, because "being a predominantly importing country of raw materials and consumption goods, it is necessary for every citizen to get involved in developing the recovery system of what we generate, through correct waste management and rational consumption of products and services" (see http://mediu.gov.md/ro/content/economie-circular%C4%83-versus-economie-liniar%C4%83). However, by absorbing European and international funds, efforts are being made to draft certain legislation in this area. Thus, through the National Development Strategy for 2012-2020 "Moldova 2020", the Government committed itself to make every effort to ensure a transition to green economic development. In 2014, the Government of the Republic of Moldova approved the Environmental Strategy 2014-2023, which set national and sectoral priorities for promoting the green economy and defined the framework for further integration of the green economy in agriculture, transport, energy, industry, construction, regional development, education and procurement. Subsequently, the Program for the promotion of the "green" economy in the Republic of Moldova for the years 2018-2020 and the Action Plan for its implementation were approved. In sectoral aspect we can enumerate:

- ✓ The national strategy for agriculture and rural development for 2014-2020 mentions that the organic farming sector is underdeveloped, so it becomes appropriate to develop and promote the organic farming system by implementing non-polluting technologies;
- ✓ The national regional development strategy for the years 2016-2020 which provides assured access to quality public services and utilities; sustainable economic development in the regions and improved governance in the field of regional development;
- ✓ Action plan for the implementation of sustainable public procurement (2015) which provides necessary measures and actions that will facilitate the inclusion of sustainability criteria in the national public procurement system (by creating and adapting instruments on public procurement, developing a communication strategy for involvement of stakeholders from public and private sectors).

So, although the implementation of the circular economy model in the Republic of Moldova is delayed compared to developed countries, and although the government develops certain projects to introduce the ideas of sustainable consumption of natural resources, we find that for the Republic of Moldova, the transition to the circular economy model is extremely timely, largely due to the large volumes of generated waste, which often significantly exceed the typical parameters for developed foreign countries.

Thus, in arguing the conclusion regarding the insufficient application of the principles of a circular economy in the Republic of Moldova we can observe several barriers, from which we can distinguish: technological, economic

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and regulatory. *Technological barriers* refer to the production processes and technologies required for the formation of closed supply chains and the corresponding technical and biological cycles of materials, products and waste. *Legislative-normative barriers* mainly concern the management of used products and waste. The lack of special labeling and a certification system with the necessary legal status also creates difficulties for the transformation of linear supply chains into closed-loop ones, preventing the proliferation of progressive business models. *Economic barriers* reflect the extremely low level of attractiveness of foreign investors who already use circular business models and could contribute to technology transfer, process reorganization and employee training. In this context, it should be noted that investments are extremely important for financing economic growth and sustainable development, but now amid the global financial crisis, one of the main problems of the Moldovan economy is the lack of investment resources. truth is that even in previous years the investments were quite modest, and the share of those from abroad was very low (Figure 1).

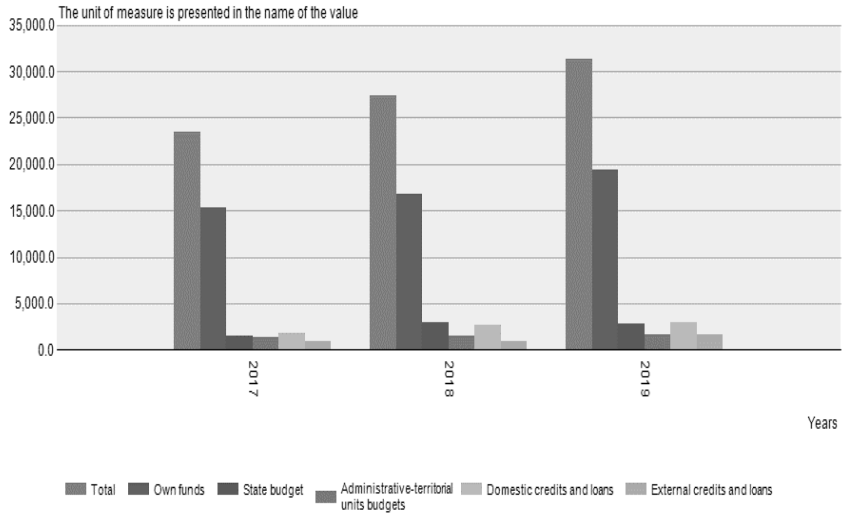

Figure 1 – Investments in non-current assets by Sources of financing and Years. Million lei (in current prices)
Source: prepared by the authors according to the data of the National Bureau of Statistics

The revival of investment activity is hindered by many negative phenomena and processes in the country's economy, and the domestic business environment is not conducive to attracting investment in the real economy. Therefore, one of the key areas of activity of public authorities in achieving sustainable economic development should be to ensure the investment sphere of the economy. At the same time, the main task of investment policy should be to form a favorable environment conducive to attracting and increasing the efficiency of investment use in the development of the national economy.

It should be noted that due to the underdevelopment of the domestic market for investment resources, there is a need for foreign investment. Investment is a dynamic process of changing the form of capital, sequential transformation of initial resources and values into investment costs and the transformation of invested funds into capital gains in the form of income or social effect. Thus, based on the above mentioned, we can draw the following conclusion that, although the inflow of investments into the economy RM has increased, but, unfortunately, the volume of foreign investment in the real sector of the economy has increased insignificantly. Consequently, improving the tools for attracting and using foreign investment in order to ensure sustainable development of branches of the national economy remains relevant. Thus, the adaptation of RM to the new economic realities will proceed in extremely harsh conditions, and investment risks will only increase. In addition, the structure of investments indicates a significant share of enterprises' own funds and a decrease in the share of budget funds. Investment attractiveness is determined primarily by the availability of economic resources necessary for the long-term development of companies, as well as by the sectoral structure of the economy that meets the interests of business. Thus, there is no doubt of the importance and relevance of investments as a driving force for the implementation of effective structural changes that increase the sustainability of development. regional economy. Innovation, in turn, depends on the level of scientific and technological progress, qualifications and the level of development of human resources. Of course, in the period of globalization, the problem of ideas and personnel can be solved by applying advanced ideas and attracting specialists from other countries. But every innovation cannot be easily implemented and adapted to the socio-economic conditions of any country. Some innovations are applicable only in their places of origin. At the state level, the introduction of innovations requires a thorough study of the degree of adaptability and an assessment of the subsequent

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impact on all sectors of the economy. It is the state innovation policy that should provide for overcoming the economic lagging by:

-increasing the competitiveness of the products of most enterprises;

- stopping the destruction of the technological unity of research and development, restoration and preservation of scientific potential;

-increasing the efficiency of innovation in the basic industries.

Based on the above, we can conclude that innovation processes are associated with the entire economy of the country. The intensification of investment and innovational activity acquires key importance for economic recovery, for its sustainable growth, and at the same time, the innovation process is impossible without economic, social and legal support. Consequently, there is a need for the creation and development of "circular economy".

Removal of economic barriers, in particular, would facilitate the achievement of economic benefits that can be expressed in the low consumption of raw materials and energy and, consequently, in the low volatility of resource prices. Let's not forget that due to the development of a circular economy, new industrial sectors related to the use of products are being created, which leads to an increase in the number of jobs. Thus, the positive impact of the circular economy would be multiple (Figure 2).

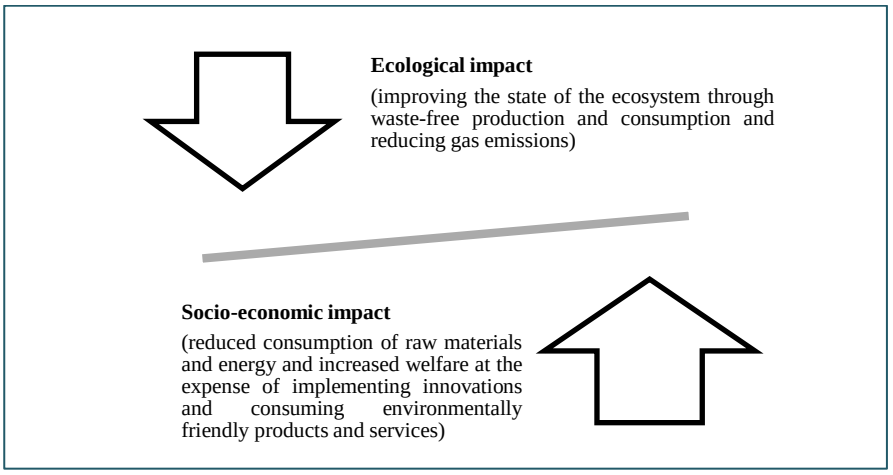

Figure 2 – The impact of circular economy on the development of society
Source: elaborate by authors

Therefore, taking into account that the circular economy is a closed-loop type and involves restorative actions, including those of minimizing the consumption of raw materials, of the volume of processed resources and waste, of optimizing consumption processes through the development and distribution of products, the transition from the linear model of the national economy to the circular one should be achieved in stages, through the efficient and common involvement of the government, business environment and scientific community.

V. CONCLUSIONS

Thus, the circular economy represents a new direction of development, the principles of which are already being actively implemented globally. In the Republic of Moldova, the concept of circular economy is not sufficiently developed, although it is imperative, because the development of a circular economy in the country will develop a positive effect of environmental protection by reducing waste, boosting energy efficiency and creating new jobs due to the reinvestment of the profit obtained by companies from new industries and activities.

The sustainable development of the national economy depends on the implementation of the latest innovative mechanisms, which are able to support the upward development of financial regulation and investment attraction mechanisms, economic-organizational structures, etc. Namely, the creation of the conditions for the implementation and development of the circular economy will make possible the economic growth in the country. At present, more and more often the size of investments and their implementation ways are determined not so much by the objectives of the country's economic growth, but also by ensuring the sustainable development of society as a whole.

The modern model of a circular economy should facilitate the country's entry into new markets of products, services and technologies. Responding to the latest global challenges in a timely manner, the circular economy model can not only reduce social stratification and increase the well-being of the population, but also ensure the country's political stability.

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Therefore, the government must face the challenge of leveling the playing field for creating organic production, reforming policies and creating new incentives for the development of the circular economy, strengthening infrastructure and market mechanisms, and moving to „green" public procurement. In other words, the business environment must capitalize efficiently and optimally the transition effort to create organic products in a number of key sectors and respond promptly to reforms of moving from linear to green production and be able to assimilate foreign direct investment.

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