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CIRCULAR ECONOMY APPLIED IN THE ROMANIAN SOCIETY AND INSTITUTIONS-PERSPECTIVES, INNOVATION

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Abstract

As sustainable development includes environmental protection and that is conditional on sustainable development, an institution's concerns in this regard must be considered as one of the priorities that will set development strategies and programs and will implement them in practice so that environmental protection be permanently taken into account. This paper aimed to highlight the concept of circular economy which refers to the harmonization of sustainable development needs of long-term humanity. It is necessary to optimize resource consumption so as to reduce the consumption of raw materials and energy and reuse them 100% if is possible, and how it is applied in Romania. In conclusion, performing the main principles of sustainable development is a necessity of time, which would result in effective results corresponding to the contemporary ecological provisions, the interests of the human society.

Key words**:** *sustainable development, circular economy, environmental, agriculture, improvement*

INTRODUCTION

The sustainable development represents a process of continuous and permanent improvement, learning and perfecting, and the introduction of sustainable development policies into a society or company guarantees the creation of sustainable (not only immediate) value and consequently long-term benefits.

Circular economy is a concept what refers to the harmonization of sustainable development needs of long-term humanity, it is necessary to perform and optimize resource consumption so as to reduce the consumption of raw materials and energy and reuse as much as possible.

The main goal is to improve as much as possible the use of resources and this fact must reach such a limit that the amount of natural resources consumed net (those extracted for the first time from the natural environment) will not jeopardize their natural recovery rate in sufficient quantities for future generations.

In another words, the circular economy represents an economy that aims to produce only zero waste. This is, in other words, a redefinition of "sustainable development" of the famous Bruntland Commission, focused on resources.

The capitalization of products and secondary resources are vital for the circular economy to be carried out in optimal terms. In this matter, the development of this new market has an important role in the practical implementation of resource efficiency. From this perspective, digital trading platforms for secondary products can actively contribute to the process of optimizing resource consumption at the level of economic activities.

The number of companies in Romania that started to report on sustainable development, in addition to financial data, is rising.

Companies that act according to the principles of sustainable development often have high performance (even in the short and medium term) over other companies due to better control of the different risk categories they are exposed to.

Consumer society appeared at the end of the 20th century, together with the tendency of population growth worldwide, intensification of the urbanization process, development and dissemination of information and communications technology, continuous

increase of the standard of living, reduction of the product life cycle. They contributed to the increase in volume and diversification of waste flows.

Given the sharp decrease in natural resources, the rapid deterioration of air quality, water, soil and the impact of natural ecosystems, international concerns regarding waste management have acquired a dynamic character in the direction of identifying the best solutions and technologies. In this context, waste management has become a fundamental problem of the future social-economic evolution, a direct result of a present economic development of linear type.

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The implementation of a performing economy aims at the production area in which innovation plays a central role, the resources are recirculated through a circular system and special attention is paid to the intelligent solutions coming from the area of life sciences specific processes.

The debates on the opportunities of the circular economy define it as the protection of the environment, as well as with increasing competitiveness, innovation and technological research.

In this respect, innovation plays an important role in terms of extended producer responsibility by developing new methods for optimizing life cycle costs, new technologies for optimizing (re) use of components, extending product life, providing options for repair, quality monitoring tools, etc.

According to Stahel (2010) [4], the determinants of the performing economy are: competitiveness, innovations in science and technology, trade (e.g. extended product life, refurbished product market), cultural consumption patterns (e.g. the number of new or old cars relative to family members from one country to another).

In other words, the circular economy implies the efficiency of the resources in order to produce more economic value with the same or less resources.

Achieving a circular economy that combines harmoniously with green growth brings to the forefront the need to implement a sustainable approach to economic activity.

Circular economy does not belong to a single area of activity or to single resource; it can be extended to all sectors of different types of synergies that can generate cumulative positive or negative effects. Circular economy requires resource efficiency to produce more economic value with the same or fewer resources.

In the last decades, the accelerated industrialization has increased the consumption, a behaviour that we have seen more and more especially in the context of technology development.

In order to implement a circular economy, the European Commission adopted at the end of 2015 a set of actions aimed at following the whole life cycle of a product, measures which have been taken over by all Member States.

The idea of circularity, respectively of closing the economic loop, appears defined in 1976 in the report "The potential to substitute the human labor force for energy" (Stahel and Reday Mulvey, 1977), being presented the vision of an economic loop in relation to the creation of new jobs, increasing economic competitiveness, saving resources and preventing waste [5].

The interest shown in approach the circularity is intensely debated in the study "Performance Economy" (Stahel, 2010), where all the concerns associated with the sustainability area are considered, a change in the economic thinking from "doing things properly" to "is proposed" he does the right thing " [4].

Specifically, Stahel (2010) proposes a sufficient type approach that can focus on intelligent system solutions and not necessarily on individual products [4].

The ultimate goal is the implementation of a performing economy, which would target the

research area, the creation of new jobs (even at home) and the exploitation of the opportunities of a performing system of extended producer responsibility.
In other words, achieving the three objectives in a coordinated manner will bring substantial synergies and benefits to economic actors.
Circular economy is based on few defining principles:
-"Waste becomes a resource: is the main feature. All the biodegradable material returns to the nature and the not biodegradable is reused.
-Second use: are reintroduced in the economic circuit those products that no longer correspond to the initial consumer's needs.
-Reuse: reuse certain products or parts of those products that still work to elaborate new artefacts.
-Reparation: find damage products a second life.
-Recycle: make use of materials founded in waste.
-Valorisation: harness energy from waste that can't be recycled.
-Functionality economy: circular economy aims to eliminate the sale of products in many cases to establish a system of rental property. When the product completes its main function returns to the company, where it is dismantled for reusing the valid parts.
-Energy from renewable sources: elimination of fossil fuels to produce the product, reuse and recycle.
-Eco-design: considers and integrates in its conception the environmental impacts throughout the life cycle of a product.
-Industrial and territorial ecology: establishment of an industrial organizational method in a territory characterized by an optimized management of stocks and flows of materials, energy and services.
-Collaborate to Create Joint Value - Work together throughout the supply chain, internally within organizations and with the public sector to increase transparency and create joint value.
-Rethink the Business Model - Consider opportunities to create greater value and align incentives through business models that build on the interaction between products and services"[1].
The purpose of this paper was to present a comprehensive image about what does circular economy mean and which is its role and impact on sustainable development.

MATERIALS AND METHODS

For setting up this paper, it was used a large documentation based on main information sources on circular economy, presenting in a logical and critical manner the approaches of various authors regarding: the definition, role and importance, principles, determinants, and achievements in various areas and including agriculture as well.
As a case study in this project, I chose a village from Braila County in Romania, where we can say that circular economy exists first of all, due to simple fact people from villages are more thrifty, because most of them keeping animals and the vegetable rests, junk food become a food source, in this way the close the loop of circular economy.
Regarding the waste wood obtained from different activities (in constructions, furniture, packaging etc.) this is also reusable part on villages area, in households or giving that in majority of Romanian villages heating is done still by burning wood in stoves and not by gas or electric.
The only problem remains the plastics – even is daily collected is important to change the mode of production and used. And for this is necessary to invest in new technologies able to protect the people, the environment and, in the same time the competitiveness and performances of our industries.
In other words, circular economy means a good management or administration no matter if we are talking about our house, our household, or village or our society and our environment, important is to understand what is bad, unsafely and unhealthy for us, for our environment now and next generations.
So, based on villages example, we can extend this idea on national level, of course, adding improvements we can discuss a good circular economy in Romania in the context of sustainable development.

Important is, also, the education and onward transmission of good habits in order to avoid the pollution.
In other words, all above listed principles need be take into consideration in this way to promote sustainable production and consumption models, which can be implemented in a society in continuous search for new sources for self-sustaining economic growth.

RESULTS AND DISCUSSIONS

The realization of a circular economy, which combines harmoniously with a green growth, brings to the fore the necessity of implementing a sustainable approach at the level of economic activities.
The process of transforming the classical - linear model into a circular one involves reconsidering unsustainable aspects in order to identify future development opportunities. The objective of decoupling economic growth from the consumption of natural resources represents an important step in continuing the efforts to promote eco-efficient economies, with an increased focus on the efficient use of natural resources.
In this regard, the approach proposed by the circular economy aims to reduce the consumption of primary sources in the production process by reusing the products, respectively by expanding the share of reused and recycled materials.
An important role is played by the process of efficiency the use of resources so that more economic value can be produced with the same or less resources. At the same time, the sustainable use of natural resources is closely linked to the identification of niches, which can bring added value to the value chain.
The circular economy is a part of sustainable development, bringing to the fore the need to optimize resource consumption in order to prevent, reduce waste and promote reuse.
The three components of sustainable development (economic growth, social inclusion and environmental protection) aim at creating conditions for the well-being of countries and their citizens by eradicating poverty, raising living standards, reducing social inequalities, or implementing global resource management measures natural (Fig.1).
Circular economy is a component part of sustainable development, bringing to the forefront the need to optimize resource consumption to prevent, reduce waste and promote the re-use.
Waste management is an important part of the circular economy but it calls into question the need for a deeper analysis of the product value chain, starting with the extraction of materials, continuing with the eco-design phase and ending with the finished product, which later becomes a new resource for another industry.

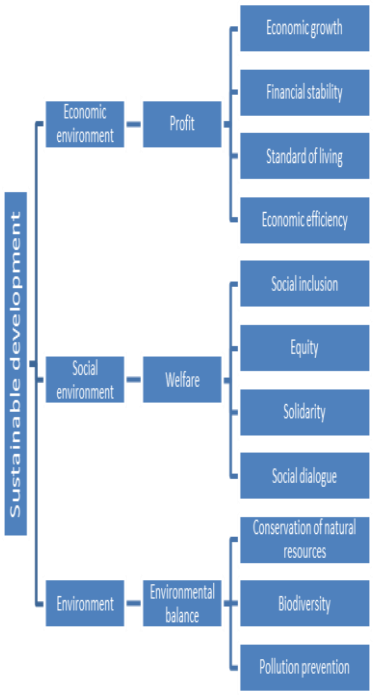

Fig. 1. Sustainable development
Source: Sustainable development (Dezvoltare durabila), Wikipedia,https://ro.wikipedia.org/wiki/Dezvolare_durabil%C4%83, Accessed on 05.02.2020 [9].

As we said above, when we're talking about circular economy we are thinking also at sustainable development and in Figure 1 are mentioned 7 keys elements are taken into consideration as follows:
(1)Prioritizing renewable resources - Ensures that renewable, reusable and non-toxic resources are used as materials and energy efficiently.
(2)Keeping and extending what has already been done - While the resources are in use,

they are being repaired and updated to maximize their lifespan and offer them a second life through takeover strategies when is necessary.
(3)Use of waste as a resource - Use of waste streams as a source of secondary resources and waste recovery for reuse and recycling.
(4)Rethinking the business model - Consider opportunities to create greater value and align incentives with business models that are based on the interaction between products and services.
(5)Design for the future - The account for the perspective of the systems during the design process, the use of appropriate materials, the design for an adequate life and the design for an extended future use.
(6)Inclusion of digital technology - track and optimize the use of resources and strengthen links between actors in the supply chain through digital platforms, online and technologies that offer prospects
(7)Collaborate to Create Joint Value - Work together throughout the supply chain, internally within organizations and with the public sector to increase transparency and create joint value [6, 7] (Fig.2).

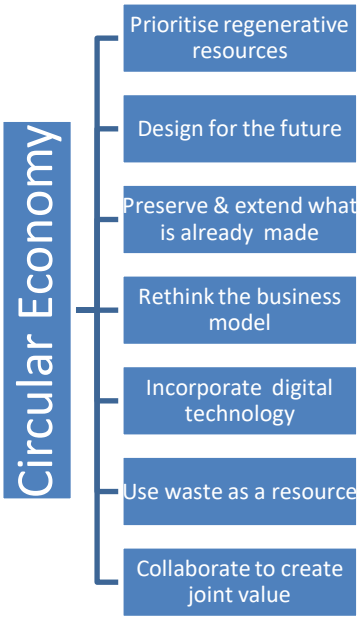

Fig. 2. The 7 Key Elements
Source: Circle economy, The 7 key elements of the circular economy, https://www.circle-economy.com/the-7-key-elements-of-the-circular-economy, Accessed on 05.02.2020 [7].

When we are referring at the village from Braila county, the actual waste collection from each inhabitant is organized on certain flows, such as: cardboard, plastic, glass, metal, wood, batteries and accumulators, electrical and electronic equipment's.
The village hall and the municipality manage carefully the generated waste and gave it to specialized collectors, thus reducing the risks to human health and the environment.
Discussing on a larger scale (county, region, country), and starting from the major differences between the member countries of the European Union regarding the elaboration and implementation of strategies for sustainable development and transition from the linear economy to the circular economy is necessary a thorough analysis of the recycling modalities, but also of community waste, packaging waste and bio-waste requires investment in research and innovation to find solutions to extend the life cycle of raw materials, waste re-use and thus so that we can talk about resource productivity and the real rate of economic growth.
After a lengthy consultation process between member countries, representatives of European producer associations and non-governmental organizations interested in promoting the circulation economy, the European Commission has come to show and endorse some measures such as:
-Introduce mandatory recycling rates for different categories of waste. For example, plastic waste, glass, metals, paper and cardboard waste as well as biodegradable waste will no longer be accepted for final storage.
-Introduction of the obligation to redesign the products with two objectives:
(a)Increasing the proportion of raw materials from recycling in the total raw materials used by companies;
(b)Increasing the recyclability of products at the end of their life cycle, together with rewriting the European Waste Code to re-consider waste as secondary raw materials.
-Adoption of economic instruments to promote re-use and stimulation of industrial symbiosis and greener products.

-Increase the recycling rate of municipal waste to at least 65% by the year 2030.
-Increase the recycling rate of packaging waste to at least 75% by 2030.
Capping the final disposal rate for all categories of waste to a maximum of 10% by 2030, including fiscal and coercive instruments such as interdict the storage of separately collected waste and surplus waste disposal 50% reduction of food waste by 2030.
-Introduce minimum standards and obligations to water users on mandatory recycling rates by sector.
In a study on the efficiency of material resources, published earlier this year by the European Environment Agency, "More from less - material resource efficiency in Europe", 32 countries in Europe were evaluated.

Fig.3.More from less-material resource efficiency in Europe
Sources: https://www.eea.europa.eu/publications/more-from-less, Accessed on 05.20.2020 [3].
http://www.eea.europa.eu/highlights/resource-efficiency-in-europe-benefits, pg.7, Accessed on 05.20.2020 [2].

In order to build the Romanian model of the circular economy, an important role is represented by the good international and European practices, also the structural and cohesion funds, must be actively and continuously supported. This support is essential for recovering development gaps, implementing new technologies, educating consumers on the role of resource efficiency, preventing and combating food waste.
As a future action, consideration may be given to awarding an additional score for funding proposals that promote options for prevention, recycling, disassembly, recycling of products in a sustainable manner by making the activities as small as possible, or introducing a voucher type for companies that promote the circular economy through implemented projects.
Other potential criteria would be: quantity of packaging waste, purchase of renewable energy products, bio-economy, etc.
As a future action step, consideration may be given to providing additional points for financing proposals that promote the options for preventing, recycling, disassembling, recycling the products in a sustainable way by achieving the least impact of the activities or introducing a system of activities. voucher type for companies promoting circular economy through implemented projects. Other potential criteria would be: quantity of packaging waste, purchase of products using renewable energy, bio economy, etc.

CONCLUSIONS

In period of economic growth, several raw materials, energy, water, construction materials and metals are consumed, so it is

important to know how much we use, recover and lose from these resources. This equation includes the circular economy, which proposes to achieve an optimal consumption of resources.

The circular economy area includes all sectors because the efficiency of the use of resources is a topic related to the ability to generate cost savings and to implement new technologies, which will make economic processes more efficient. In this way, we can say that it goes beyond its scope in the area of environmental protection becoming a holistic theme, which can be in synergy with many other policies - for example. industrial policy/clusters/ competitiveness/economic/research/innovation/education, etc.

The circular economy is closely linked to the aspects of increasing competitiveness and at the same time this concept brings with it a number of benefits, but also challenges to which all stakeholders, whether private or public, or simple citizens, must respond.

In conclusion, the key to a circular economy in Romania is represented by the development of new sustainable business models who aims to promote the efficient use of resources and to protect the environment.

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