Circular Economy as an Answer to the Global Development Challenges

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Abstract

The Circular Economy is today one of the most important theoretical interdisciplinary concepts which is increasingly shaped into a coherent purposeful whole. The concept, as a "focal point," draws attention and at the same time impact a whole range of theoretical, methodological and applicative disciplines, intellectual movements and practical techniques, developed over the past decades as an attempt to respond to some of the greatest global challenges of the modern world: devastation of natural resources, uncontrolled accumulation of discarded remnants of these resources after their exploitation and return to the system as (often very toxic) waste, disturbance of ecosystem balances and endangering the environment in the widest sense. The paper points to some of these concepts whose contributions in this domain have attracted the greatest attention of the scientific and professional public, such as “Cradle to Cradle", Performance Economics (also known as Functional Service Economics), Biomimicry, Industrial Ecology, Natural Capitalism and Blue Economy.

Keywords: Circular Flow of Materials and Energy, Sustainable Development, Environment, Industrial and Social Systems, Zero Waste Models

1 INTRODUCTION

Modern economies, as well as societies, are strongly marked by globalization, a phenomenon that dramatically increases and accelerates the flows of capital, people, goods and information at the planet level. Like all developmental phenomena in history, globalization is also followed by numerous controversies and contradictions: it is a factor of the unprecedented development of economies and societies, of the growth of general welfare and living standards at the planetary level, but at the same time it is a factor and cause of problems and difficulties because of its comprehensiveness and all-encompassing presence in virtually all domains of the functioning of modern societies [16]. Because of this in some cases it begins to pose a risk for humans and the planet. Forms of development based on traditional technologies which in the framework of globalization get the characteristics of the omnipresent phenomenon, become the cause of climate change, devastation of natural (especially energy) resources, pollution of the environment and dramatic disturbance of the balance in ecosystems. These changes today are taking place on a global scale and going on with such dramatic intensity that makes them a threat which requires a quick, decisive and radical response that will be as comprehensive as the problems that it is trying to answer to. Today, in the current conditions of the modern industrial environment at the global level, the concept of the Circular Economy is one of the most important attempts to create a completely new, innovative approach to economic (and overall social) development [5]).

The authors of the concept introduce a completely new perspective on how to create technological processes and products, in which resources and sources of energy needed, instead of being consumed and permanently wasted and lost, are constantly regenerating and renewing. The basis of the successful development of this process is creativity and innovation that become its immanent characteristics and features.

2 THE MODEL OF CIRCULAR ECONOMY

The Circular Economy is focusing on benefits that relate to society as a whole and thereby attempts to overcome the limitations of current models based on the extraction and definitive consumption of natural resources that leave behind a devastated and contaminated natural environment. In this new innovative approach to economic activity, the unlimited and uncontrolled consumption of natural resources which is part of the creation of waste materials and pollution - is gradually abandoned. The

circular model relies on renewable energy sources and in this context, it builds economic, natural and social capitals.

The Circular Economy is based on the three following key principles:

- Reducing or even eliminating waste and pollution from the system
- Continuously holding of products and materials in function
- Restoring and conserving natural systems

The essential characteristic of the model is its universality and applicability at all levels of functioning: local, regional and global. It is important for large, but also for small businesses. It is applicable in the functioning of organizations, but also in the lives of individuals. The concept of a Circular Economy can be understood as a system that, on a long-term basis, creates an economic and business framework for development and creates benefits for the economy, society, and the living environment in the widest sense.

The Circular Economy model is based on the cyclical movement of materials and energy in closed systems. There are two basic generic types of cyclical movement: technical and biological. Biological cycles are "projected" so that materials (food, biological materials, such as wood, agricultural products, etc.) are returned to the system after their use through processes such as composting, anaerobic digestion, etc. Through these cycles, living systems are restored, such as soil, flora and fauna, whereby the sources of energy and resources are constantly renewed, thus ensuring the continuously sustainable functioning of the economy and society. Technical cycles do not have these characteristics at a priori level, but they can be designed so that products, components, and materials are regenerated and renewed through strategies such as their reuse/multiuse, repairing, processing and, ultimately, recycling.

3 THEORETICAL BASIS OF THE CIRCULAR ECONOMY

The notion of a Circular Economy, or rather a circularity as a phenomena in society and nature, is not new - on the contrary, it is spoken of even in ancient times in a more or less direct way, and many of its related ideas can be found in some of the most important antiquity schools of philosophy. After the Second World War, in the most developed industrial countries, this idea again gained considerable attention especially in the study of non-linear systems within the framework of developm1ent of the first computers. This practice has pointed to the complex, interconnected and therefore unpredictable nature of the world in which we are living. Processes that take place in this world are much more similar to biological processes (e.g. metabolism) than to the processes of operation of mechanical devices and machines. It seems that in the modern times, the development of digital technology development will even accelerate transition from a traditional to a Circular Economy through a dramatic increase in phenomena such as virtualization and dematerialization of economies and social phenomena and development of the artificial intelligence based on feedbacks. The concept of Circular Economy as one of the most important contemporary theories of the functioning and development of modern economies and societies is the result of the work of numerous authors from different theoretical disciplines, both technical and humanistic, as well as engineering, who have contributed to its development for the last several decades. However, its practical application in modern economic systems and industrial processes has received a special momentum in the late seventies of the last century. An important role was played by a group of theoreticians, businesspeople and other public figures, which is relatively small, but proved to be very influential. Today, the concept of Circular Economy represents the synthesis of several very important theories about the functioning of the economy and society. It includes the following theoretical schools of thoughts: the philosophy of design known as Cradle to Cradle; a Functional Service Economy, known also as Performance Economy; Biomimicry; Industrial Ecology; Natural Capitalism; Blue Economy and Regenerative Design and other. The concept of a Circular Economy is considered a “point of meeting” all these (and related concepts) and theories. It encounters and intertwines their most important theoretical and methodological approaches, which in a synergistic way contributes to the formation of a very respectable corpus of knowledge, methods and techniques, which ultimately could lead to a relevant answer to some of the most important issues and challenges of the contemporary world economies and societies, such as: climate change issues, global pollution, uncontrolled spending and permanent devastation of resources and energy, etc. Hereinafter, the crucial elements for each of these concepts, their mutual relations and connections and particularly their impact on developing of the concept of Circular Economy, are presented.

3.1 Cradle to Cradle Design Concept

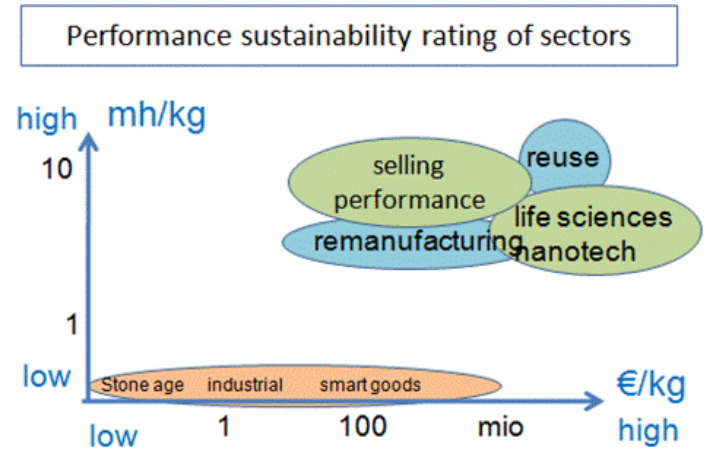
Concept known by the name Cradle to Cradle or C2C is based on the approach of creating technical, as well as social systems, which seeks for an inspiration in the processes that happen in nature. In that aspect, it is about the so-called biomimetic approach1 whose direct role model is the metabolic process specific for living organisms where different substances (such as food) are introduced to the process; they are processed in a healthy and secure manner, than they are thrown out of the system and returned to the nature where they once again, through different processes (for example, different types of agricultural processing), appear in different material forms (agricultural products and the food produced based on it). The process continues by introducing these materials (agricultural products) once again to the metabolic process and the entire circle is renewed again. It is about a circle flow that renewed continually in an unhindered manner and that, therefore, has no negative side-effects. In this process, there is no creation of polluting waste materials, harmful for the nature from which they are coming from. The term itself (from Cradle to Cradle) was created from a popular corporative phrase from Cradle to Grave. The process starts by birth, but unlike the standard process, it does not end with the death, i.e. „grave", but it is renewed (it is „born" once again and returned to the „cradle") and that is how it functions as a continuous self(sustainable) process. This implicates that the model is sustainable and secure in the aspect of the future life and future generations. It is a holistic concept that was firstly developed as a model applicable within technical systems, but it was soon extended to wider economic, and the widest social systems. Within industrial production systems, this approach stresses the need of achieving harmony with the natural systems, so they are not endangering them by pilling up of the waste, pollution, impairment of balance in the ecosystem, etc. Moreover, if possible, these processes should protect and enrich natural processes through the balanced and sustainable „technical metabolism ". Very quickly, the concept has found its application in numerous social-economic systems, such as functioning of complex urban systems, construction and running of different building complexes, and other.

The syntagma Cradle to Cradle was firstly launched by Swedish architect Walter R. Stahel in the 1970's [18], but the very concept was further developed by German chemist Michael Braungart and American architect Bill McDonough [3]. The term „Cradle to Cradle„ is today a protected trademark of the consultant company McDonough Braungart Design Chemistri (MBDC). Concept, therefore, starts from the standpoint that all the materials included in industrial (and generally, economic and social) processes are metabolic „raw materials for processing ", i.e. the „nutrients". Although nutrients in biological processes are different from the inputs that are used in technical-technological processes, the principle that both processes follow, are not different. In both cases, these substances enter the process, they get processed, and as the result we have final output. What is important for the concept C2C is that the process (biological, technical and social) is structured in such a manner that the negative effects on the environment are either reduced or eliminated after its ending. The creators of technical systems within the concept from Cradle to Cradle are trying to observe the processes of a natural „biological metabolism "as a model for the development of technical „metabolic" systems within which the flow of industrial materials takes place. They try to devise the components of products in such a manner that they could be continuously renewed and reused as it is the case with the process of biological metabolism. In these systems there practically are no waste and harmful materials; on the contrary, once used inputs that have passed through the processing are again returned as renewed, recycled resources. This, however, implies that along with manufacturing processes, simultaneously the systems for collection and recycling are established. Inputs in the above-mentioned aspect can be included in one of the two categories: technical or biological one. Technical inputs can be considered as materials (nutrients) which „feed" technical processes and commonly refer to synthetic materials. What make a difference between these „nutrients" and synthetic materials used in standard technical processes is that they are non-toxic and therefore harmless for the natural environment. Instead of being disposed of after being used as a waste, they can relatively simply be recycled and therefore they have multiple usages within continuous production cycles.

[1]Biomimetics is the name for a combination of scientific disciplines of biology, chemistry, mathematics and physics aiming at the study of structures and functions of biological systems. The knowledge obtained in this manner is supposed to be used as a model for development of different technical and social systems.

3.2 Economy of Performances

Previously mentioned Swedish architect, Walter Stahel, after creating the expression Cradle to Cradle in the end of 1970's, continued his work on development of concepts of the so-called closed loop in technical manufacturing processes. Moreover, he founded Product-Life Institute in Geneva whose main four goals were: extension of products' life span, creation of long-term goods, regeneration of activities and waste prevention.



Stahel, Walter (2010) The Performance Economy, Palgrave

In the year 1976. Stahel prepared a special report entitled The Potential for Substituting Manpower for Energy which was ordered by European Commission [18]. In this report, Stahel has expressed his vision of economy that moves in circles (Circular Economy) and described its possible impacts on the creation of new jobs, economic competitiveness, saving of resources and prevention of waste creation.

One of the important aspects that he particularly insisted on was the creation of economy with much more stress on services than products. He called this approach „functional economy of services“ which was later developed in the term Performance Economy [19]. According to Stahel, Circular Economy is a general generic framework for the definition of basic principles that are common for several theoretical approaches and concepts. In his works Stahel also explains how businesses and governments, owing to technological progress and application of innovative and creative approaches, don't have to accomplish their goals in the market at the expense of the environment or waste resources unnecessarily. On the contrary, with the application of high performance economy which is based on „smart“ high technological solutions, they can achieve significant benefits for themselves and simultaneously contribute to the environmental protection. The benefits that can be expected from such an approach, among others, are the following:

- Introduction of the models based on highly technological solutions improves the performances of economic processes and simultaneously creates much more workplaces and higher value added
- By the development of services related to the usage and sale of products, their performances are increased, in a longer time period
- By introducing innovative solutions in traditional sectors, resources are used in a more efficient manner and simultaneously, both manual and highly qualified jobs are created which affects the reduction of overall unemployment; energy is more efficiently used, and less waste is generated
- Introduction of new technological methods helps establishing socially more acceptable relation between engaged labor and used resources.

3.3 Biomimicry

The concept of Biomimicry is based on attempts to mimic natural forms, processes and ecosystems when designing industrial processes, in order to achieve the circular design of the product as the goal. The basic idea is that Nature has already solved many of the problems that man faces today: energy conservation, food production, climate control, harmless chemistry, efficient transport, cooperation between process actors and much more. To create a sustainable economy, one does not have to start from "zero" - it is enough to carefully observe the Nature [2]. Thus, studying an ordinary leaf of a plant can result in a significant improvement of solar cells; studying the formation and functioning of coral reefs can initiate the creation of the idea of developing a more sustainable company, etc. Innovation with the application of a biomedical methodology usually begins with one simple, but crucial question: "What the Nature would do in our place?" Such an approach can result in the creation of an individual innovative solution and a new idea, but also in a complete reversal of the given context by applying processes that are in the natural environment already confirmed as safe for present and future generations. In this process, we have three forms or levels of biomimicry whose application can initiate innovations at the most diverse points in the system [2]:

- The first level of biomimicry is the imitation of the natural forms - For example, imitation of owl's feathers in order to create a fabric that opens anywhere along its surface. Copying the design of feathers is only the beginning that can lead to the solution, which is applicable not only at some points, but for the system.
- The second level of biomimicry imitates natural process, i.e. imitates the manner of making natural materials - Owl's feathers are assembled autonomously at the body temperature without any toxins or high pressures, through natural chemistry (so-called Green Chemistry tries to imitate these recipes of the nature).
- At the third level there is the imitation of natural ecosystems - Owl's feather is a part of a complex system: it is a part of owl's organism which is a part of the forest, which is a part of biome, which is a part of sustainable biosphere. Like this, fabric inspired by owl must be a part of a bigger economy which works on renovation, rather than exhaustion of the Earth and its resources. However, we must bear in mind the so-called "wider perspective": namely, if only the fabric production is inspired by Green Chemistry technology and the workers vow in workshops with non-efficient technological processes, put it on the lorries that pollute the environment and distribute it in an inefficient manner – the final goal of sustainable systems development will once again remain unaccomplished. It is necessary, therefore, to apply the innovative, biomimicry methods along the whole process and thus enable the sustainability of the system (not only its individual subsystems).

Imitation of the natural system requires that when designing a product, attention is not focused solely on the product as such, but it is necessary to pay the same attention to its integration into the system. This may involve assessing its ability to meet consumer needs, its aesthetic aspect, integration into the systems of industrial chains, its convenience for transportation, possible forms of sales, and at the end its regeneration in the way that it does, for example, a forest as part of a wider natural system. If it is possible to imitate nature on all three levels (the level of the natural form, the natural process, and the natural system), then everything that all well-adapted organisms do will be achieved: to create conditions suitable for life. Creating conditions suitable for life is not optional, but it is necessary for all organisms that manage to fit in for a long period of evolution. In order to preserve the earth as a home of mankind, people will have to learn from their predecessors how to filter the air, clean water, restore land, i.e. how to keep the habitat lush and sustainable. Janine Benyus, one of the promoters of this approach and the author of the book Biomimicry: Innovation Inspired by Nature, defines the new approach as "a discipline that studies the best ideas of nature, and then imitates these designs and processes for solving human problems" [2]. Studying of the leaf in order to make a better solar cell is one of the examples. She observes that as an "innovation inspired by nature". According to this author, biomimicry relies on three crucial approaches:

- Observing the Nature as a model that people can and should imitate by studying their natural systems, way processes within them take place and then by their imitation we can reach the solutions of human problems
- Using natural resources as standards for measurement: sustainable technical innovation processes can be evaluated based on their contribution to ecological solutions

- Observing the Nature as mentor: relationship with Nature should be such that we learn from it and take its solutions that have passed multiple evolution verifications and applied them in solving the problems of contemporary humanity, instead of taking and devastating resources from it.

3.4 Industrial Ecology

The discipline Industrial ecology deals with the study of the way within production industrial systems we establish the flows of material and energy. The goal is for those flows to be shaped like closed processes where the inputs are processed into final outputs so that waste creation is reduced to the least possible measure and the waste which is created anyway is recycled and taken back as a regenerated input in the next production cycle. During projecting of production-technical processes, Industrial ecology takes into consideration the ecological constraints and, simultaneously, their global impact. The guiding idea of this approach is for the processes to be shaped in such a manner to function in a way that is like the functioning of living biological systems. Having in mind the inter-disciplinarily of this approach, it is sometimes defining as “science on sustainability”, which stresses the preservation and regeneration of natural capital, as well as sustainability of social welfare [15]. Industrial ecology as a concept is presented to both scientific and professional public by the article of the authors Robert Frosch and Nicholas E. Gallopoulos, published in the magazine Scientific American in 1989 [6]. Their idea was that the industrial systems should be designed looking up to ecosystems, where the materials that represent waste in one process, become the resources in the other. Outputs of one industry should be the inputs of another, which reduces the consumption of raw materials, preserves the environment and the issue of waste is solved in a more efficient and cheaper manner. Good example for such a practice is the industrial park in the city of Kalundborg in Denmark, which is projected in such a manner that there are established numerous and diverse connections between the processes of different sections and subjects that function within the park. The system functions in a manner that by-products and waste heats are exchanged between the power plant, oil refinery, pharmaceutical factory, gypsum boards factory, enzyme manufacturers, public utility company that treats waste and local self-government.

Industrial ecology is a discipline that covers different fields, from technical and engineering disciplines, natural sciences, to the economy and general social sciences. It can be defined as “multidisciplinary discourse based on systems that strive to the understanding of the emergence of complex integrated social and natural systems” [6]. Ambition of the authors of this approach is to study processes in nature and identify basic principles according to which they take place and then to try to apply them in technical and social systems by the method of analogy. Similarly, to natural processes, newly-projected technical-industrial and social systems based on this approach become the models with the so-called “closed loops” where there is no waste and no undesired effects for the environment. Studies within the discipline of Industrial ecology particularly deal with the following issues:

- Studies of material and energy flows (so-called "industrial metabolism")
- Dematerialization and decarbonization of industrial processes
- Relationship and impacts of technological changes on the environment
- Planning and projecting life span of the products
- Projection of the systems in accordance with the environment (so-called “eco-design”)
- Development of eco-industrial parks (so-called “industrial symbiosis”)
- Ecological policy oriented on products development
- Development of ecologically efficient systems

Having in mind general goals of Industrial ecology, related to the energy and material preservation, its efforts to redefine market relations so that the stress is transferred from products to services, development of the Industrial ecology can be observed as one of the goals of the Natural Capitalism.

3.5 Natural Capitalism

Concept of Natural Capitalism observes contemporary economy as a global system where the interests of business and natural environment meet and respect each other [14]. The business

operations are based on both types of capitals: one which was created as a result of people's activity and other which is result of the Nature. Natural capital is defined as global supplies of natural goods, including land, air, water and all living beings. The concept of Natural Capitalism was developed and promoted by Hawken, Amory Lovins and Hunter Lovins [9]. Their most significant recommendations for redefining contemporary forms of the functioning of industrial and social systems can be summarized as follows:

- Natural resources should be used in a productive and efficient manner - Through innovative changes in designing of the products, manufacturing processes and application of advanced technologies, natural resources can last much longer, they can be renewed all the time, unlike the common practice today where they are devastated and permanently destroyed.
- Designing of the processes and products in line with Nature and trying to imitate it as much as possible – in this domain Natural capitalism, similar to Industrial ecology, tends to eliminate waste in processes through developing the closed loop systems where the inputs move in cycles, entering the processes and returning to the environment in a harmless manner through recycling.
- Gradually switch to the Services and Flows business model – in this approach, the stress is transferred from manufacturing and consuming products and goods to the value creation through a continuous flow of services which harmonizes the interests of sellers and buyers and simultaneously, the resources are used in a more productive manner.
- Reinvest in natural capital – natural capital is not unlimited and indestructible, so its uncontrolled usage can bring to danger its renovation and the maintenance of natural systems. In the system of Natural Capitalism, it is, therefore, implied that those who are using natural capital, i.e. natural resources in order to achieve their business goals, should invest in its renovation and regeneration.
- Advocates of the concept Natural Capitalism criticize traditional concept of industrial capitalism. Unlike the last one that puts the stress on financial capital and its unlimited extension and reproduction, Natural Capitalism in its calculation of values includes natural resources and living systems, as well as social and cultural systems that are the basis of capital created by the people.[2]

This approach tries to ask the question on how the contemporary economies would look like if we would equally evaluate all capital forms – not only industrial, but also natural ones and how would economy look like if it would not function exclusively according to abstract principles of neoclassical economy and corporative accounting, but also of the nature. It advocates for the application of standard accounting principles, both on financial and natural and human capital. In that manner, natural resources would not be any more treated as free available inexhaustible goods, but on the contrary, as limited and therefore valuable factors of production. According to the authors, such options are realistic and possible. Moreover, choosing them could "offer an astonishing new set of possibilities for entire society, nothing less than the very next industrial revolution [9]. In the system of traditional industrial capitalism, capital appears only in the form of money and goods. Natural Capitalism, however, extends this perspective and includes both natural and human capital in the capital. In this new perspective, the issues such as pollution, social injustice, etc., become the general issues of economic and social system functioning, rather than exclusively the issues of capitalism as a system of financial profit generation. In that aspect, the assumptions that Natural Capitalism is based on, are the following:

- Development of global economy in the future is directly dependent on the level of availability and functionality of the natural capital, particularly on the resources that are irreplaceable and for which we cannot, therefore, determine their commercial, market value

[2]In an interview from the year 2009., Paul Hawken looked back on the term "natural capitalism" which is the name of this concept and discipline. He mentioned that the intention for the title was to be the reference to the expression *natural capital*, which was firstly made by E. F. Schumacher in 1973. Hawken has supported the basic concept of natural capital and its implication for the society and added to the word "capital" the suffix "-ism" in order to emphasis that industrial systems need to include and valued in their operations the phenomena related to the nature. According to Hawken, although they support the spirit of trade and entrepreneurship, authors of the concept do not support the "pathological" characteristics of "pure capitalism".

- Main causes of the devastation of natural capital lie in business systems that function according to the principles of classical capitalism and wasteful forms of consumption that are related to it. These problems require the undertaking of economic and social policy proactive measures in order to reverse the mentioned unfavourable trends
- Sustainable economic development can be achieved within free market system, but the one within which all capital forms are completely evaluated, including the one created by the people, as well as natural capital
- Benefits of economic development cannot be measured only by indicators of quantitative growth (continuous, uncontrolled growth of production, sale, profits) but primarily by the increase of the level of services quality
- Establishing sustainable economies and, in a wider aspect, social and natural systems, cannot be achieved if we firstly do not correct the excessive global inequalities in the distribution of incomes and material goods.

3.6 Blue Economy

The concept of Blue Economy is related to the Belgium businessman Gunter Pauli, who has prepared the Report in 2010 under this title for the Roman Club [13]. In this Report, he has listed a series of specific case studies, i.e. practices that he had labelled as Blue Economy. Blue Economy is, to a less extent, observed as a separate comprehensive theoretical discipline, but more as a way of thinking and an intellectual movement that is specific for the openness and readiness to include similar ideas, concepts and methods. Blue Economy is described as a system where the "resources are used in cascade systems in which the waste from one product, becomes the input for the creation of the new cash flow" (Gunter P., 2010). In the Report mentioned, the specific cases are described as "100 innovations that can create 100 million workplaces in the next 10 years". According to the concept, the final goal of the business model of Blue Economy is the transformation of society of scarcity to the society of abundance, in such a manner to solve the issues that cause ecological problems as well as the social problems that result from them, by the application of innovative and creative processes. Blue Economy particularly advocates for the usage of innovative, scientific approaches that have the characteristics of the so-called open source, i.e. which are open and available to everyone, in solving crucial issues of economy, looking up to the processes common for the natural world. The aim of this approach is to find solutions that are ecologically useful and that simultaneously bring financial and wider social benefits. It is suggested to change the way industrial processes are led by re-directing the processes in which rare and high energy inputs are used, to the solutions that are based on simple and pure technologies. In addition, it is suggested for the focus to be transferred from costs reduction to the creation of new added values.

4 CONCLUSION

The Circular Economy is one of the most important and most relevant attempts to answer the problems of today global development. Its significance is especially emphasized by the fact that it is a concept around which several theoretical approaches and intellectual movements have been grouped in the last few decades, slowly creating a relatively coherent body of knowledge, theoretical hypotheses, methodologies, as well as practical, concrete solutions (technological procedures, innovation and policy) focused on solving these problems. All of these concepts are focused on new technologies, on innovative and creative solutions that try to transform the straight-line, one-way flow of development that leads to devastation of resources and nature as a whole, into the circular one, and so to return it into the equilibrium and harmony in which the welfare of subjects at all levels will be realized. In such a revolutionary development framework, the benefits of states and corporations will be aligned with the benefits of local communities and individuals; economic development will not endanger, but will support the development of other social areas, and ultimately all these flows and processes will be in harmony with the natural environment (earth, water, air and all living beings on the planet Earth).

Finally, it can be concluded that all these concepts that are intertwining and meeting in the theory of Circular Economy, have almost identical goal: finding a way to reverse the effects of classical models economy and the society development, characterized by linear growth based on the principles of Take-Make-Spent-Throw. In these models, resources are viewed as always accessible, unlimited and

available so it's only focus is to extract them in enough quantities, to generate ever-increasing quantities of goods that can be sold in order to achieve as much profit as possible. The resources that remain unused during processing are simply dumped, i.e. treated as unnecessary by-product - waste, which is in uncontrolled way throwing so that at one moment inevitably disturbs the balances in the environment. Contrary to this approach, the Circular Economy requires innovative, creative models of development that are sustainable, clean, non-toxic and in line with the natural environment in the broadest sense (with land, water, air and all living beings).

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