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THE INFLUENCE OF CIRCULAR ECONOMY ON QUALITY OF LIFE

Abstract: *Circular Economy is a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. This theory requires deep changes of people, organizations as well as government's behaviour. The article attempts to identify the main aspects related to circular economy that are influencing and affecting the quality of life, which is a new concept for production and consumption.*

Keywords: *Circular economy, quality of life, production, consumption, waste management, sustainability.*

1. Introduction

The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy. This is supposed to be also a one of the key indicator for a more of a quality of life factors. Such transition is the opportunity to transform our economy and generate new and sustainable competitive advantages for Europe. The circular economy will boost the EU's competitiveness by protecting businesses against scarcity of resources and volatile prices, helping to create new business opportunities and innovative, more efficient ways of producing and consuming. It will create local jobs at all skills levels and opportunities for social integration and cohesion which also improve a life quality of the EU inhabitants (European Commission, 2015). At the same time, it will save energy

and help avoid the irreversible damages caused by using up resources at a rate that exceeds the Earth's capacity to renew them in terms of climate and biodiversity, air, soil and water pollution. In the report Ellen McArthur also points at the wider benefits of the circular economy (Ellen MacArthur, 2015), including in lowering current carbon dioxide emissions levels. Action on the circular economy therefore ties in closely with key EU priorities, including jobs and growth, the investment agenda, climate and energy, the social agenda and industrial innovation, and with global efforts on sustainable development. Sustainability aims at addressing environmental and socio-economic issues in the long term. In general, the literature on sustainability has focused mainly on the environmental issues, whereas, more recently, a circular economy has been proposed as one of the latest concepts for addressing both the environmental and socio-economic issues. A Circular Economy aims at transforming waste into resources and on bridging production and consumption activities;

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however, there is still limited research focusing on these aspects (Witjes & Lozano, 2016).

From the other site Quality of life (QoL) is a very complex and broad concept. Every person has its own subjective view on this issue so it is difficult to define it. You can try to determine the attributes of quality of life common to all people, such as to move freely; social relationships; adequate financial situation allowing for meeting the basic needs; independent living; understanding of the surrounding world; finding a satisfactory activities; acquisition of knowledge; improvement activities, etc. The quality of life is also the level of satisfaction obtained by man as a result of the consumption of goods and services, leisure activities and benefit from material and social conditions of the environment (Nowicki, 2016). The quality of life (QoL) concept is currently embraced by three major branches of science: Economics, Medicine, and the Social Sciences. Each discipline has fostered the development of a quite different view of how QoL should be conceptualized and measured (Cummins, 2005).

The article attempts to identify the main aspects related to circular economy that is influencing and affecting the quality of life, which is a new concept for production and consumption.

2. General aspects of Quality of life

Quality of life is defined by the World Health Organization (WHO) as "individual perception of their position in life in the context of culture and systems value in which they live and in relation to their objectives, expectations and standards". Any attempt to systematize the quality of life requires to evaluate the criteria describing the essence of quality of life as well as the comparative ones, taking into account the conditions and events allowing for a

comprehensive description of the conceptual category. Definitions of quality of life will be differently considered by an economist, engineer or doctor. Definitions of quality of life that can be found in the literature referring to the following spheres of human activity:

- the psychological and moral,
- the socio-cultural and
- the technical and economic.

On the basis of a variety of definitions for quality of life is distinguished by some constant elements, such as objective factors, social factors and subjective factors. Objective factors usually reflects material prosperity, social factors are measured by means of social services and available infrastructure, and in the framework of subjective factors it shows some ephemeral characteristics, for example, mental feelings of units, satisfaction and happiness (Nowicki, 2016).

3. General aspects of Circular Economy

The concept of the Circular Economy has been gaining momentum since the late 1970s (Ellen MacArthur Foundation, 2013). Several authors, like Andersen (Andersen, 2007), Ghisellini (Ghisellini, Cialani, & Ulgiati, 2016), and Su (Su, Heshmati, Geng, & Yu, 2013) attribute the introduction of the concept of circular economy to Segerson, Pearce and Turner (Segerson, Pearce, & Turner, 2006) by describing how natural resources influence the economy by providing inputs for production and consumption as well as serving as a sink for outputs in the form of waste, they investigate the linear and open-ended characteristics of contemporary economic systems (Geissdoerfer, Savaget, Bocken, & Hultink, 2017). The most renowned definition has been framed by the Ellen MacArthur Foundation, introducing the Circular Economy as "an industrial economy that is

restorative or regenerative by intention and design” (Ellen MacArthur Foundation, 2013). Similarly, Geng and Doberstein (Geng & Doberstein, 2008), focusing on the Chinese implementation of the concept, describe the Circular Economy as the realization of a closed loop for material flow in the whole economic system. Webster adds that a circular economy is one that is restorative by design, and which aims to keep products, components and materials at their highest utility and value, at all times (Webster, 2017). Accordingly, Yuan state that the core of the Circular Economy is the circular (closed) flow of materials and the use of raw materials and energy through multiple phases (Yuan, Bi, & Moriguichi, 2006). Bocken et al. categorise the characteristics of the Circular Economy by defining it as design and business model strategies that are slowing, closing, and narrowing resource loops (Bocken, de Pauw, Bakker, & van der Grinten, 2016) (Geissdoerfer et al., 2017).

According to the authors one of the most complex definition of the circular economy is one provided by Geissdoerfer, Savaget and others (Geissdoerfer et al., 2017) that describes Circular Economy as a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling.

4. Relation between CE and QoL

The influence of circular economy on quality of life can be described in the following subjects (European Commission, 2015):

Production – where a circular economy starts at the very beginning of a product's life. Both the design phase and production processes have an impact on sourcing, resource use and waste generation

throughout a product's life. The production impacts QoL by the level of satisfaction from the product usage.

Consumption – where choices made by millions of consumers can support or hamper the circular economy. These choices are shaped by the information to which consumers have access, the range and prices of existing products, and the regulatory framework. This phase is also crucial for preventing and reducing the generation of household waste. According to this, the level of knowledge of people impact on the level of satisfaction form services and product usage. The already done changes and voluntary commitments of international corporations concerning e.g. the reduction of plastic consumption in packaging and generally more sustainable production influence the socio-cultural aspects of our live. We are now facing the changing of behaviors of all consumers that is triggered by EU politics and increasing sustainable people approach.

Waste management – it plays a central role in the circular economy: it determines how the EU waste hierarchy is put into practice. The waste hierarchy establishes a priority order from prevention, preparation for reuse, recycling and energy recovery through to disposal, such as landfilling. This principle aims to encourage the options that deliver the best overall environmental outcome. The way we collect and manage our waste can lead either to high rates of recycling and to valuable materials finding their way back into the economy, or to an inefficient system where most recyclable waste ends in landfills or is incinerated, with potentially harmful environmental impacts and significant economic losses. This subject may have a two way influence on quality of life. On one site this will be seen in a very positive manner due to the cleaner environment. Irresponsible usage of non-renewable resources can be negatively perceived from the psychological and moral point of view. From the other hand this will

require a lot of effort from people that may not like it and it will decrease the QoL (e.g. more complicated waste segregation and higher costs).

From waste to resources: boosting the market for secondary raw materials and water reuse. In a circular economy, materials that can be recycled are injected back into the economy as new raw materials thus increasing the security of supply. These "secondary raw materials" can be traded and shipped just like primary raw materials from traditional extractive resources. On macro level in a long term perspective it will definitely bring a positive results increasing the general QoL of the population. However right now in micro scale this may cause some disadvantages such as: the fear from usage of secondary raw materials/products (e.g. unpredicted impact on people's health due to lack of information on the origin of the secondary raw materials).

Priority areas – according to the EU policy and research a number of sectors face specific challenges in the context of the circular economy, because of the specificities of their products or value-chains, their environmental footprint or dependency on material from outside Europe. These sectors need to be addressed in a targeted way, to ensure that the interactions between the various phases of the cycle are fully taken into account along the whole value chain. These areas cover: plastics, food waste, critical raw materials, construction and demolition as well as biomass and bio-based products.

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5. Conclusion

CE is not just a next popular theory - it is impacting people right now in real live and it has an enormous impact on QoL. The transition to a circular economy is a systemic change. Implementation of CE principles support efforts to develop a sustainable, low carbon, resource efficient and competitive economy. The aims of CE can be discussing on such perspectives as: environmental quality, economic prosperity, social equity or impact on future generations (Kirchherr, Reike, & Hekkert, 2017). It is also the key driver for innovative development. Innovation will play a main part in this systemic change. In order to rethink of ways of producing and consuming, and to transform waste into high value-added products, there is a need for new technologies, processes, services and business models which will shape the future of our economy and society. All those innovations translate to technical and economic positive changes and in consequences influence QoL.

Acknowledgment: The Project has been financed by the Ministry of Science and Higher Education within "Regional Initiative of Excellence" Programme for 2019-2022. Project no.: 021/RID/2018/19. Total financing: 11 897 131,40 PLN.

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