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THE INTERPRETATION OF CIRCULAR PRIORITIES TO CENTRAL EUROPEAN BUSINESS ENVIRONMENT WITH FOCUS ON HUNGARY

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In recent years, there was an increase in economic concepts which defined various concepts for the European Union to leave the economic depression behind. The idea of circular economy boomed into the sight of European Union policy makers in the beginning of 2015. The notion introduced a holistic system planning approach for EU development initiatives. This paper introduces the essential background for the interpretation of circular economy and presents the main priorities throughout its implementation. The size of the European Community leaves many opportunities for the reconsideration of circular processes. The study focuses on circular applications in Hungary which substantially differ from the Western-European practice. The different wage and development levels of the member states in some cases might appear as a possibility to extend product life cycles which otherwise would end sooner. The analysis aims to find the reasons for the variant operations and examines how the extended spatial perspective from national levels to the EU level influences the transition to circular economy.

Keywords: circular economy, bioeconomy, circular priorities, circular model

Introduction

In recent years, there was an increase in economic concepts which defined various notions for the European Union to leave the economic depression behind. Out of these, the bio-economic and low-carbon systems' strategy published in 2012 became a significant milestone (European Commission, 2012). They offered well-defined advices for both European scientists and business stakeholders – most notably from the British expert teams that created the German 'Bio-economy Council', or the framework of the EU's trade system. However, the defined development routes were often interpreted with insufficient economic and social background analyses which left room for their interpretation. This, in turn, made their effects hard to comprehend, too. The first 'era' of bio-economy focused on the economic advantages of bio-technology (Langeveld et al., 2010). According to the suggestions of OECD, further topics of interest were added: agriculture, health, and industrial systems were followed by energy production and nanotechnology (OECD, 2009). Due to differences in professional opinions and arguments about climate change, the advancement of concepts slowed down significantly. The drastic material and energy usage decreased due to the economic depression that began in 2008. It further caused the concepts aiding low carbon emission systems to lose their leading role. The European Union Emission Trading System (EU ETS), in other words, the key facility of emission trading became incapable of operating (Koch et al., 2014).

The idea of circular economy boomed into the sight of European Union policy makers in the beginning of 2015 (European Commission, 2015). The notion introduced a holistic system planning approach for EU development initiatives. There has never been a similar novelty presented by any other perspective before. It offers a cross-sectoral development path to replace the widely criticized linear practices with production systems based on closed material loops (Ellen MacArthur Foundation, 2013). The popularity of the concept and the expectations towards its long-term success are both unprecedented in the field of EU policies which highlights the importance of its application.

The essence of the circular economic model lies in an industrial/service system focusing on material cycles over the traditional "end-of-life" (EoF) approach (Andrews, 2015). Furthermore, it stimulates the increasing use of renewable energies and aims to eliminate waste through innovative design of materials, products, production systems and business models (Ellen MacArthur Foundation, 2013). An important aspect of the circular perception is that it relies on bio-economic and low-carbon principles to describe biological and technological cycles. Finally, it emphasizes the significance of the elaboration on the scientific context.

This paper introduces the essential background for the interpretation of circular economy and presents the main priorities throughout its implementation. The study focuses on circular applications in Hungary which substantially differ from the Western-European practice. The analysis aims to find the reasons for the variant operations and examines how the extended spatial perspective from national levels to the EU level influences the transition to circular economy.

Basics of Circular Economy

The main advantage of circular economic models is that they prefer a holistic approach to development sectors, where the cooperation between market actors, the stable and long-term operation of local systems, markets based on local resources and the innovative mobilisation of the labour market are the primary points (Ellen MacArthur Foundation, 2014). Through the designation of such models, scientific adequacy and interdisciplinary approaches are quite relevant. The bio-economy and low-carbon economy mentioned in the introduction are partially joined as one for circular economic systems. Circular economy aims at closing material flows regarding two great cycles. One is determined by the cycle processes of biological cycles, whereas the other, the closed systems of technological cycle processes are the sustainable system solutions (Figure 1).

Based on previous professional findings, there are three important basic policies for the optimal design of circular economic systems:

The principles of the Circular Economic model

Principle of inputs

In the first step, the circular concept conserves and increases the natural resource systems by maintaining a continuous control on resources and

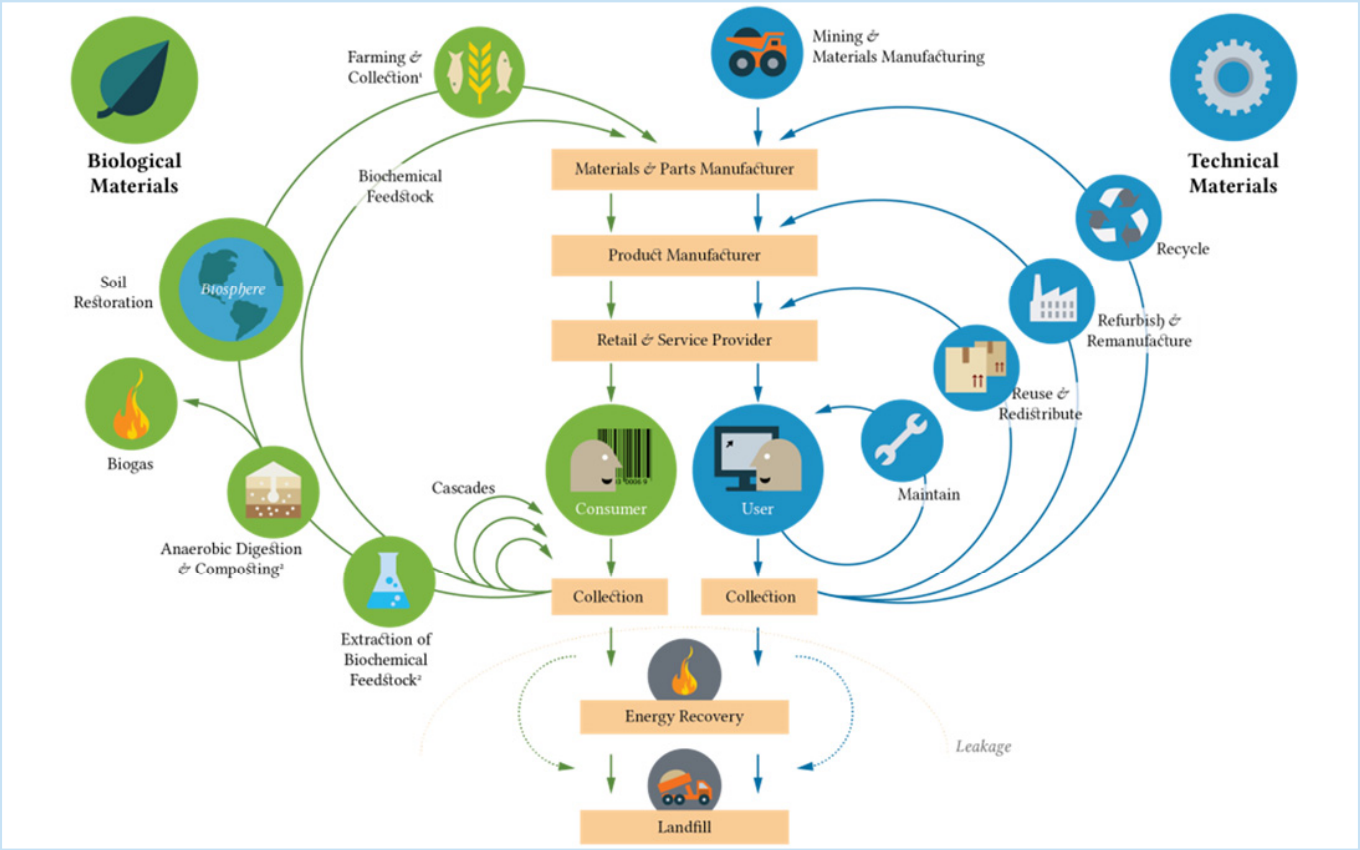

Figure 1 Biological and technological cycles of circular economy
Source: Ellen MacArthur Foundation, 2014

balancing the material flow of renewable energies. In case of the inputs, the concept prefers the flow management approach over the stock management perspective, meaning the flow of renewable resources and technological materials instead of amassing them in stocks. Thus, the circular management processes mainly focus on the constant supply of renewable and non-renewable resources (e. g. soil regeneration or secondary raw materials). That can be achieved through the maintenance of material cycles and most importantly, by increasing the ratio of service functions.

The principle of sustaining cycles

The previously mentioned biological and technological cycles close system processes through loops which appear in certain lengths. Since the function and the growth of the economy depends on the quantity of available resources, the cycle-based thinking contributes to the sustainability of production systems. In the case of the linear systems, the economy is simply unable to grow and flourish without sufficient resources (raw materials). On the contrary, the circular solutions offer constant availability of biological resources and raw materials by the establishment of material flows. It aims to return the main components of biological cycles to the environment (e. g. soil nutrient cycles, water cycles) through the shortest possible cycles – mostly referred as cascades. The circular models generate new product cycles within the technological progresses by recovering raw materials and refurbishing or repairing technological systems.

The principle of outputs

This principle aims to enhance system efficiency by focusing on preliminary processes to avoid negative externalities. It consists of land use planning, water and noise pollution abatement, health promotion and avoidance of toxic materials – all achieved through the utilization of local resources.

The Building Blocks of Circular Economy

The circular economy concept is highly popular for government strategies and entrepreneurs as well, since it aims to exchange the traditional linear economic process with an alternative, logical economic perspective which turns towards the future. The most promising side of the circular economy concept is that it separates economic growth from the increasing input requirement, by which it can stimulate innovation, and may continuously generate new jobs. The new economic building blocks may cause changes in the interpretation of business processes. The current expectation is that these building blocks can lead to system-level changes in the near future.

The Ellen MacArthur Foundation determined four main points or base mechanisms which are required for constructing or redesigning the circular economic systems (Ellen MacArthur Foundation, 2015). These are:

- **Circular economy design** – a key element of circular economy is the refurbishing and regenerative planning process. The capability to recover materials must influence not only the end of the life cycle, but it should also offer fundamental competences for entrepreneurs to prevent the generation of waste. This pattern is the best to achieve by decreasing the consumption. However, in cases where the purchase of new products is inevitable, they must remain in use as long as possible. Therefore, the design of long-lasting products is a significant aspect of circular economy (Bakker et al., 2014a). Information has to be amassed related to the circular product design and appropriate methodologies can be created for it as well. In the case of planning and final consumption, feedbacks must be collected in order to raise the efficiency of system operations.
- **Introduction of new, innovative business models** – the business models introduced by the circular economy concept do not prefer the

possession – stocking – of products. The novel business initiatives rather focus on the satisfaction of consumer demand by the employment of service functions. One of the most anticipated concepts for the realization of this idea is 'Sharing economy'. The phenomenon supports the economically and environmentally efficient usage of products which means users sharing their application to reach a higher level of utilization. The implementation of sharing platforms is only one example for innovative business ideas. In the new business solutions, entrepreneurs look for partners they can connect to vertically in the linear system. However, they can also increase their business opportunities via other cooperative business connections, and mutual, cross-sectoral cooperation as well (Webster, 2015). In case of circular solutions, the goal is not to acquire the largest slice of the 'pie', but to make the entire pie as big as possible.

- **Reverse cycles and cascades** – the circular economic model concentrates on two main aspects. One is the area of biological cycles, or cycle processes and their maintenance, in which material flows must be kept in motion as the primary preference. During the material usage, waste is not generated (or only in small quantities), since in all phases, the system assigns waste a value (via so-called cascades). The main goal of circular economy is to completely recycle organic materials into the primary resources (soil, water, nutrients). In this way, it can continuously supply resources to any areas from food production to resource material production. The circularity of technological systems is maintained by similar cycles (Benton et al., 2015). The system tries to avoid generating waste as much as possible through lengthening the life cycles of products and their components.
- **Enablers and favourable system conditions** – in the case of circular economic solutions, making connections, cooperation forms which span through the product chain or sectors is a general practice. It means things like joint resource material acquisition, sharing information, or joint educational training programme, or marketing cooperation agreements. The development of the system can be inhibited by actual regulatory mechanisms, tax practices, economic limitations, etc. Political decision makers often have to be persuaded that circular systems mean a more efficient development branch, and that they must be assisted by governmental decrees as well. Circular economic models come with less risk regarding operational conditions, as entrepreneurs are not threatened by fluctuations in the acquisition costs of resources or the consequences of market instabilities (Ellen MacArthur Foundation, 2015).

Circular Priorities

The well-known term of '3R' has been first established in the early 18th century where it stood for the basic skills taught in education systems (Reading, wRiting, aRithmetic). Later on, it has become popular as the motto of environmentalists regarding the social attitude towards waste. The famous R's symbolized the Reduction, Reuse and Recycle of materials in order to decrease the amount of waste (Demirbas, 2011). The concept can be considered as an early echo of circular economy since it also promotes the sustainable use of resources. Throughout the 20th century, humanity has transparently turned away from the function of natural ecosystems by creating linear economic systems (Sauvé et al., 2016). In case of nature, the term 'waste' is an unknown notion because it works in perfect circulation (Sherrat, 2013). It means that the output of an individual organism would always be utilized by another life form as an input (Hertwich, 2005). Another important aspect of the natural ecosystems – apart from not producing any waste – is that the phenomenon of overconsumption is also unknown. Humanity had to progress in the early stages of history in a fashion similar to animals. Hunting, foraging, and finally, producing for its own consumption were the stages to gain food for humanity. Nowadays, these processes became obsolete, due to artificial supply systems. Foodstuffs which became more and more cheap, and easy to acquire, induced the limitless consumption of the current society (Szaky, 2014). In the last half-century, economy also began to advertise the advantages of exploiting man's proneness to over-consume in other areas of life. The researchers of alternative economic solutions summarised three main pillars which they believe support the present consumer society.

One is recognized as 'planned obsolescence' (Bulow, 1986). The term refers to the artificially shortened lifespan of products which forces consumers to frequently buy new products (Agrawal et al., 2015). The other is the question of loans. Though this tool was always meant to induce economy, at first, it was used for making the one requesting loan to invest money for later profit acquisition. However, it became a tool for sustaining the continuous need for consumption. Eventually, another pillar of consumer society surfaced in the form of marketing which is one of the most efficient methods of influencing consumers to further enhance consumption.

The processes of nature must be stressed because they also have an influence on creating an accurate interpretation of circular economy (Andersen, 2007). The reason is that the name referring to circulation – based on earlier experiences – often births a completely incorrect interpretation. This may become fatal, as the establishment of a scientific and practical basis is only in progress currently. The name 'circular' incited some researchers to look towards recycling on multiple occasions before. Meaning, most researchers started from the question of how the huge mass of waste, could be recycled into the production systems. This is an incorrect interpretation. Circulation, in essence, refers to the natural circulation, which was detailed above. According to the idea, economy has to adapt the operation of natural ecosystems, where the logic of systems living in symbiosis with each other, fundamentally prevents the appearance of waste (Pearce, 1992). Furthermore, in this cycle, no over-consumption exists either.

The theory itself is not completely new, since alternative perspectives appeared one after the other from the 1970's (e. g. bio-mimicry, industrial ecology, natural capitalism, cradle-to-cradle, blue economy), which placed production systems on a natural basis (Pauli, 2009; McDonough and Braungart, 2002; Hawken et al., 1999; Benyus, 1998; Erkman, 1997). Circular economy considers all these theories its predecessors, and adopts the 'Solve the problem at its roots' motto as its main policy. This also stresses that instead of searching for waste treatment solutions, the prevention of waste must be achieved in the first place (Benton et al., 2015). A much older connection can be considered as the source of this statement, which is the Jevons paradox – a basic part of environmental economy. William Stanley Jevons described the long-term negative mechanisms of efficiency improvements in his 1865 book "Coal question" (Jevons, 1865). The problem is that technological developments aim to increase the efficiency of currently used systems (Sorrell, 2009). In his example, the increased efficiency of coal-based production resulted in decreasing industrial air pollution, but only in the short term. In long-term, the economically sound processes caused an increase in technology usage which increased overall carbon-dioxide emission (Alcott, 2005). This economic paradox has been further applied to other resources as well and proved to be valid even for current energy production systems (Brockway et al., 2017). Based on this, it is easy to imagine what would happen if circular solutions would only focus on end-of-life stages of products by returning material flows into production.

The 3R policy is also based on a similar logic, as only one of the three keywords focuses on recycling, the other two suggest that consumption must

be limited and already purchased wares should be used for as long as possible. Tom Szaky, CEO of the waste management company, Terracycle, is also committed to the elaborated logic. He believes that before the recognition of a product as a waste, three things should be considered. The first is the function that it fulfilled. If it can still be employed for its original purpose, one shall continue its usage. In case it represents a lower level of quality due to its amortization, it could be delivered to second hand shops. Thus, others can still decide if they are willing to use it in its current form. The second important aspect is the product's shape. People are used to the phenomenon that production systems assign single functions to different products to increase consumption. Therefore, one does not even think of how many uses a product could have. For example, instead of buying a new flowerpot, plants can be placed in sour cream boxes as well. Returning to Szaky's thoughts, the material of the used product is the last aspect. If a product is incapable of serving its original function and cannot be used for other purposes either, that is the time for recycling (Szaky, 2014).

During the design of circular theses, researchers introduced an expanded toolset of waste management and prevention which consist of 9R nowadays (Cramer, 2014). They are recognized as the priority levels of circularity (Figure 2). The hierarchy of the certain tools has been defined by two major aspects. The first one is the 'function before the material' policy, which aims to lengthen the usage of the product for its intended purpose for as long as possible. It aims to assure that the preferred process is conducted with as low material usage as possible. The second priority is to minimise the used energy. In other words, after the effective life cycle is finished, the product should be changed to suit other purposes with the lowest possible energy requirement.

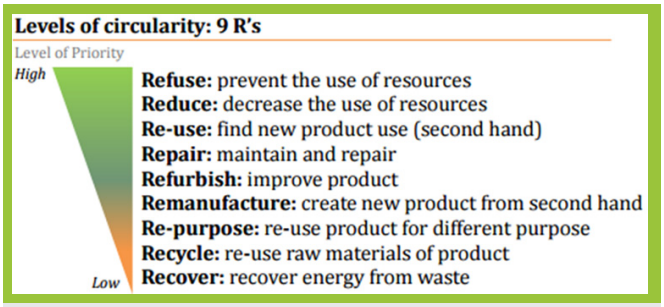

Figure 2 Levels of circularity: 9 R's
Source: Cramer, 2014

Refuse

The refusal being the highest priority has always been a bottleneck in terms of economic adaptation. The critics of circular economy are not able to comprehend how the economic growth would be sustained without increasing material flow on the market. Concerning the conceptual interpretation, many argue that the word 'circularity' stands for the circulation of materials. In accordance with their perception, if the perfect (closed) material cycle is created, the system can be considered circular (Kraaijenhagen et al., 2016). The problem of this logic is that it only takes into account one attribute of nature, the elimination of waste. However, based on the previous description of natural ecosystems, another significant aspect of nature is the lack of overconsumption. The latter is a significant phenomenon in modern consumer societies. The other problem of the strict focus on closed cycles is that production processes still leave an enormous impact on environment (Fogarassy et al., 2016). It means that the major challenge of future production systems will be the decoupling of processes from finite and fossil resources anyway. While development endeavours mostly aim at improving the resource efficiency at early stages of product life-cycles, there are certain theories focusing on the consumer side (Tukker, 2015). During the 1970's, Swiss architect Walter Stahel introduced the concept of 'Performance economy', which provided theoretical ground for moving the current stock-based preferences towards services (Stahel, 2010). The simplest example is the public washing machines in the United States, which are well-liked among people. In these facilities, customers can pay to use washing machines instead of buying them.

Furthermore, the business model made by Hilti also shows that philosophy does not merely stand its ground on the competitive market, but may even generate explicit competitive advantage (Intlekofer et al., 2010). The most notable consumers of construction tools are construction firms, who have to calculate with a high cost in order to purchase and store equipment. These firms work on a commission basis, which means a situation where they do not use tools required for a certain commission until they get a similar one. Hilti, which sells construction machines, realised these needs, and began to lease its products. This strategy leads them to less manufacture of products, which decreased the stock and in turn reduced their production costs. Meanwhile, the number of their consumers expanded. People looked for their products on the market because they were able to rent them instead of purchasing. Hilti offers a prime example of how reducing production secures an extra source of income, and may cause economic growth (Johnson et al., 2008). Therefore, one important pillar of circular economy is to change a 'consumer' into a 'user' (Kraaijenhagen et al., 2016).

Nowadays, as a result of mass digitalization of business models, the application of the performance economy principles has become widely anticipated. While the digitalization of commerce processes is not exactly a novelty, the so-called 'Uberization' of business models has created a whole new economic perception: the idea of 'Sharing economy' (Belk, 2014). The interpretation of the concept is quite controversial, but it undeniably has mutual characteristics with Performance economy regarding the efficiency of material usage. The term Uberization comes from the flagship initiative of the notion, the car-sharing platform of Uber. Although sharing platforms are considered as the future of business and commerce (Cohen and Kietzmann, 2014), their interpretation substantially differ in several countries. In case of countries with advanced consumer attitude, the society showed positive attitude towards such companies. Meanwhile, in other countries (e. g. Hungary), the operation of Uber was quite controversial, causing its eventual elimination from the market.

In Hungary, the representatives of the business blamed the incapable policy makers and the aggressive competitors for their exodus and stated that "the country is not mature enough" to comprehend their futuristic approach. Whereas their observation seems accurate, it must be stressed that the company itself was to blame for its own failure as much as the business environment. The original purpose of Sharing economy was to provide opportunity for users to share their possessed goods in order to achieve a higher level of utilization (Bardhi and Eckhardt, 2012) This pattern does not always come with robust profits from a capitalist perspective, but serves the aim of social good and environmental efficiency. On the contrary, the function of Uber rather reminded people of a traditional taxi company which receives tax relief. Therefore, some taxi drivers joined their organization to gain benefits by doing basically the same activity and others started to protest. As a Conclusion for the Hungarian case of Uber, it can be stated that the business environment was not the most appropriate, but the company did not truly represent the values of sharing either. It appeared more like an initiative which tried to take advantage of related taxation benefits whilst its activity followed capitalist principles.

Reduce

The reduction of resource usage requires efforts from both producers and consumers. In case of the former, businesses must utilize less resources to produce goods or even decrease their production and move towards service-based directions. On the other hand, consumers are able to reduce their own consumption which is the most efficient way of waste mitigation. Without purchasing products, there would be no subject to turn into waste (Webster, 2015). The question arises which side shall make the first move in the supply and demand relations. In the time of classic economic theories, this matter would have not existed at all, since the minor amount of products could not even satisfy the entire demand. The circumstances changed in the early 19th century, when the economic growth induced a level of production which could not be matched by the demand of society (Greenwald and Stiglitz, 1987). That is when companies have turned to certain tools (e. g. planned obsolescence, marketing) in order to artificially generate consumption. Considering that currently an average person – from the western civilization – consumes 10 times more than a 100 years ago, the answer to the question regarding supply-demand aspects definitely comes from the latter side. It is the society being responsible to consciously reduce their consumption and force businesses to produce less products. However, the interpretation of the several methods is not that simple as there are direct and indirect acts to decrease unnecessary material flows. The most efficient direct action is to change consumer attitude by neglecting the various marketing tools (e. g. the pay for 2, take 3 discounts), and do not buy products which are not needed.

In case of indirect acts, people have the opportunity to reduce the usage of resource even if they buy a certain product. One of these possibilities is to choose long-lasting products (Bakker et al., 2014a). Concerning the life cycle of products, an important thing is that the price of a product is usually calculated based on the initial stages of its life cycle (which means until it gets to the consumer). Obviously, as its fate after the purchase is uncertain, it would not be fair to include the cost of treatments which take place at the end of their life cycle. By the involvement of these costs, some products would cost a lot more than their current market price. A good example for integrating externalities into product prices is the gradual increase of tobacco prices, based on what amount governments spend on healing the respiratory problems caused by smoking. A similar situation applies to short life cycle (usually worse quality) products as well. The amount of waste they generate grows constantly and results in an increasing amount of maintenance costs regarding waste treatment facilities (Bakker et al., 2014b). Furthermore, beyond social costs, if the consumers would summarize their total expenses, they could see that buying and replacing cheaper products over and over generates a higher cost than purchasing a more expensive product which lasts a lot longer. This is where the statement "the cheapest products are the most expensive, and the ones buying them waste the most" comes from.

Another indirect method to decrease consumption is to purchase local products. This aspect has been defined by multiple theories before the circular thinking was spread. Many concepts stress the economic and environmental importance of strengthening local markets. This is how national wealth remains within national borders most efficiently (Hildreth, 2011), and transporting international products does not cause such a strong load on the environment either. In case of purchasing local products instead of those from abroad, the volume of decrease in the material flow is multiplied as well, since not only the product is manufactured in the country, but the distribution systems do not have to be constructed either. In case local markets gain more control, not only the money will be kept in place, but also resources which are important due to their nature of being limited in quantity (de Jong et al., 2016). The preference of local products is one of the most emerging trends in Central European countries since the heads of these states realized the harmful economic effects of import goods which dominated their markets since the regime change. However, the problem with local production products is that they are usually more expensive than their imported replacement goods. This is the reason why most of these products are sold in Western-European markets where the wage level of the society is quite higher. Therefore, emphasizing the external costs (due to health, environment etc.) in case of cheap foreign products would be a significant feature in order to develop a more advanced consumer behaviour in transition countries.

Reuse

The action of reuse is a well-known method to decrease the robust amount of waste generated by mankind. It mainly refers to second hand activities which make it possible for people to hand in their used goods. This way they can save them from turning into garbage. On the other hand, the ones in need are able to buy a product of which they could not afford an original piece. So the definition is easy and second hand stores are widely anticipated throughout Europe and the world. Nevertheless, the function of these businesses still differs from each other depending on which side of the continent they take place. While in case of the UK or the Netherlands similar stores follow the described protocol, the Hungarian practice is a bit different. In Hungary, these shops are mostly run under the name of 'British' or 'American' second hand. It means that they acquire their supplies from the labelled countries. This phenomenon would not be a problem in the first place, if these products were entirely second hand. The reality is that most of them have never been used and they were transported to other countries because there was no sufficient demand for them in a country of origin. It might also happen that the original owners bought them in a discount (which offered multiple goods in the same type) and they decided to turn some into second-hand without usage. The Hungarian chain store called Háda is specialized in this field of business. Based on the description of the distinct second hand routines, there is a major difference between them in terms of circularity. While the Western-European practice truly stands for a reusing activity which extends the life cycle of products, the Hungarian application remains linear. By offering non-used goods, the similar stores only function as businesses distributing simple export products.

Repair, Refurbish and Remanufacture

"I suggest to purchase a new product since the repair costs would be more expensive". This sentence has become one of the most anticipated trademarks of the 21st century's consumer society. Most of the time it is used for digital appliances but lately this perception has been extended to a wide range of products. The phenomenon is slightly related to the previously mentioned planned obsolescence. The minor difference is that whilst planned obsolescence artificially shortens product lifespan during the manufacture, in this case the consumer is intentionally prevented from extending it by maintenance. Therefore, a significant aspect of circular economy is to enable consumers to lengthen the life cycle of goods through certain methods. The collective name of these applications is "Circular design" which refers to a novel engineering direction for creating long-lasting products (Bakker et al., 2014b). Its primary goal is to design products which would be easily repaired in case of malfunctions. Looking at priorities, out of the three processes, this one is the most efficient, since this process can be concluded with minimal energy usage and waste remaining.

Refurbishing differs from this process by focusing on the compatibility characteristics of certain products. It is a frequently appearing pattern that one cannot use a product any longer not because the whole subject is broken but due to wrecking a single component of it. Circular design aims at

solving this problem by producing goods which can be disassembled. Thus, the consumers are able to exchange the broken element and maintain the usage. Maybe the most notable complication can be seen in this area, as one of the most widespread business models of our time is the so-called 'lock-in effect'. The concept is based on companies locking their customers to themselves after the purchase of a product (Amit, Zott, 2012). This strategy has been applied by Nespresso and Apple as well. As for the former, after a customer buys a coffee machine, he/she can only use the Nespresso capsules to make coffee. Concerning the latter, Apple made a firm structure, in which everything is against the basics of circular economy. Their many varied technological hardware and software creations are only compatible with the company's other products explicitly. The first, and maybe the most notable scandal related to planned obsolescence is also related to them. When they released one of the iPhone series, they deliberately used a short life battery, and refused to exchange it. Instead, they urged their consumers to buy new products. These companies are good examples for how circular economy's spread requires not only social support, but also serious aid from business actors.

In the case of remanufacturing, recycling and the previously introduced refurbishing are blended together. This tool aims to make a new product from the elements of the used ones (Bocken et al., 2015). An excellent example is when two laptops malfunction at the same time, one has a screen error, and the other a frame error. In these cases, a company suggests buying new ones, but if they were to combine the usable elements of the two, only one would become waste. Unlike repair, refurbish and remanufacture both generate waste from the used or broken components. However, these methods consume much less resources and energy in comparison with the manufacture of brand new products. Most importantly, these processes enable consumers to preserve the original function the product is supposed to fulfil.

Concerning the interpretation of the elaborated Circular design tools to Hungarian circumstances, an interesting question emerges. It is a widely applied method in these nations to transfer certain goods (e. g. cars, motorcycles, digital appliances) from western countries and apply one of the methods (repair, refurbish, remanufacture) on them. This could happen due to several reasons. One occurs when a product faces a natural amortization and although it is still applicable through a bit of maintenance, its owner decides to sell it. Since the product does not meet the regular consumer standards in a origin country of origin, it gets sold in Central-European countries. The consumer requirements and wage levels are lower there and they can be satisfied by a renewed product from a more advanced country. Another example is the case of public transportation vehicles which become outdated in western nations due to new environmental legislations. Usually, these vehicles are still capable to fulfil their function – which is the transportation of people – but they are not in compliance with the new regulatory standards anymore. These norms are usually also lower in Central Europe. Therefore, it is possible to extend the useful life of the affected vehicles.

Re-purpose

The current method is rather known as "Up-cycling" which is the first case regarding circular priorities when a product loses its original purpose (McDonough and Braungart, 2013). The essential characteristic of this method is to find alternative applications for goods which lost their primary function. One example would be the wallet made out of used wrapping paper, or the wall clock made of an old black vinyl record (Spitzeck, 2011). From a certain perspective, this process is more efficient than the repair or refurbish. The smart solutions under this category are usually independent of additional material inputs. However, circular economy prefers to preserve the original role which would be lost in this case. The reason is that a consumer would need the function, so the purchase of a new product would happen anyway. Therefore, assigning a new purpose to an outdated material remains only as a smart solution which prevents the generation of waste. Based on this logic, the structure of circular economy became much clearer too. At first, it urges that consumers should think about a product before buying it, and consider its necessity in the first place. Eventually, if the answer is yes – and the needed function requires both the usage of material and the creation of a new product – the procured product shall fulfil its function for as long as possible.

Recycling

Regarding the concept of circular economies, this mechanism is the first to come up in many people's minds. The considerably low place of recycling in circular priorities highlights that the idea of circulation is more than simply returning material into the process. The method mainly focuses on the material composition of objects which cannot be maintained anymore and there is no alternative application form for them. Even though it creates room for using secondary raw materials, the further production processes require another round of energy usage. Most of the consumers are not aware how the selective garbage collection required for recycling works. They cannot be held responsible for that, since similarly to the previously mentioned linear product design makes things difficult for them.

A century ago, wares were made of one-two different raw materials. Nowadays, the materials used to manufacture products are extremely complex (Szaky, 2014). This is one of the reasons for recycling facilities not working efficiently even in some developed countries. Concerning other nations, the activity or the amount of population is simply insufficient to reach the critical mass required for maintaining the system. A positive example for an efficient recycling case study is the aluminium sector. In that case, manufacturers have already realised that using secondary raw materials significantly decreases energy usage, thereby reduces production costs as well (Frischknecht, 2010). Therefore, business stakeholders are obviously motivated to provide society with facilities for collecting returned products. This example clearly shows that while on higher levels of circular priorities (Refuse, Reuse, Reduce), the attitude of consumers has a higher impact on processes, at lower levels the production side becomes more relevant.

Recovery

The energy recovery from waste occurs only at the lowest level of circular priorities. The most anticipated form of this method is the application of trash combustors. The efficiency of such facilities may substantially differ according to their attributes and equipment (Grosso et al., 2010). However, disregarding their performance, the negative externalities (e. g. air pollution) caused by them surpass the level of benefits they bring. This is the reason why there is not a single facility on the whole world which would generate profit. Their disadvantageous function proves that the success of the current technology does not depend on the development level of countries but it is not economically viable. Nowadays, other solutions spread for energy recovery which may be implemented according to circular principles a bit better.

One example is the new electric car developed by Toyota, which uses wastewater as fuel. Another is a Dutch system converting cattle manure into biogas in the province of Friesland. Although these initiatives resemble to circular priorities, they could easily lead towards deceptive directions. The goal of Toyota is to make use of the robust quantity of wastewater in cities, whereas Dutch people tend to reduce the negative externality content of agricultural load (Kraaijenhagen et al., 2016). The problem with both activities

is that neither properly represents the fundamental requirement of circularity which aims at 'treating problems at their roots'. The bottleneck regarding cattle husbandry is the significant environmental load of the animals; both from the perspective of their water- and carbon footprint. Therefore, the Dutch province which exploits the manure may first seem to be more efficient than other agricultural systems. However, their energy production concept could favour an increasing husbandry size which in the long term causes more environmental problems than the advantages of using their manure.

Linear solutions

Regarding waste management systems, linear methods currently dominate the Hungarian practice. The previously mentioned trash combustion falls under this category. Although the method has some level of energy production, it should be refused from both economic and environmental perspective. The other widespread linear process is waste disposal by which people throw away products which reached their end of life by area usage (Szira et al., 2016). These methods have the main problem of not upholding the main policy of circular economies, which treats waste as resources.

Conclusion

The analysis of circular priorities and their Hungarian application clearly indicated the difference from western practices and original circular principles. The results are still a bit controversial since they show that the initial adaptation of circular economy leaves room for interpretation even in case of developed Western-European countries. One of the most interesting outcomes of the research is the perception of how the roles of the supply and demand sides deviate according to the level of circularity. Regarding higher circular priorities, the influence of consumers is definitely more decisive. The refusal of consumption implies to a whole new economic model which prefers to satisfy consumer needs by services rather than stocks. This idea has many names of which the currently most popular one is 'Sharing economy'. The definitions of the term vary but the present study only focuses on their core aim: the introduction of a new economic perspective based on services. While the idea appears quite popular in the western civilization with many related applications (e. g. food sharing or room sharing), its Hungarian introduction was highly disputed. The case study of the ride sharing platform 'Uber' highlighted that the Hungarian circumstances are not yet prepared for the realization of the concept. Although the social attitude is more influential on higher circular levels, it was the business environment to ruin the Hungarian implementation of that initiative.

Concerning the reduction of consumption, the indirect aspects appeared more important as they required a mature behaviour from the consumers. The preference of long life cycle and local products would save such additional material flows which significantly decrease the environmental pressure of production activities. The main problem is the twisted nature of the Hungarian production systems. The structure of these schemes in Western-European countries is entirely different. In that case, the local consumption is supplied by local producers, whilst the large-scale production facilities produce for export. The Hungarian picture shows the opposite mechanism. A substantial amount of the local products is sold in western markets and the national demand is satisfied by large-scale producers.

The reuse of products in Hungary demonstrated a whole new interpretation in comparison with the more developed European nations. As long as their example presented the appropriate implementation of the second-hand concept, the Hungarian case left major leakage points on the loop. The original idea of second-hand stands for the extension of product life cycle by changing ownership. The previous owner offers a product without gaining any profit and the new one chooses to utilize it despite its deficiencies. The elaborated mechanism mostly fits the circular principles as it does not create new material flow for the demand of the new owner. However, the Hungarian practice differs from this process by selling imported goods which might have never been used before. This method highly resembles to the simple distribution of import products which is considered as a linear activity.

From a certain perspective, the repair, refurbish and remanufacture tools are a bit similar to the application of reuse because their subjects are also goods imported from Western-European countries. The difference is that in their case there is room for the circular principles to prevail. By providing maintenance to these products and selling them in Hungary, one prevents them from becoming waste. Usually, these products are transported to Central Europe because they either do not meet the new legislation standards in their country of origin or there is simply no demand for them due to the higher wage level. In both cases, it is a beneficial pattern that they should not go directly to waste but there is still room for their application in other regions with matching regulations or consumer preferences.

This Conclusion is the most relevant outcome of the research. It shows that the size of the European Community leaves many opportunities for the reconsideration of circular processes. Even though local markets are rightfully preferred in circular economy, the presented examples showed that there are products which can be treated on higher circular levels in an extended territorial perspective. The different wage and development levels of the EU member states might in some cases appear as a possibility to extend product life cycles which otherwise would end sooner. There are leakage points in the system as well, though. The aspect to occur as an opportunity on one hand might lead to an obstacle on the other. The original interpretation of reuse also falls under the beneficial processes of circular priorities. The used products which would not be sold in western countries are better to be exported to regions where they meet the demand standards. The problem takes place at the cases when the results of overconsumption end up in second hand stores of other nations without any usage. Therefore, the present paper suggests to extend national boundaries to reach higher levels of circularity on the EU level, but the appropriate legislation is required to avoid linear processes.

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