

CASE STUDY IMPLEMENTATION OF CIRCULAR ECONOMY BUSINESS MODELS IN BIH

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Executive Summary

Circular business models

We can find numerous definitions of circular economy in relevant literature. The World Economic Forum defines circular economy as “an industrial system that is restorative or regenerative by intention and design ... aims for the elimination of waste through the superior design of materials, products, systems, and business models”.¹ Ellen McArthur Foundation’s definition emphasizes three principles of circular economy: “design out waste and pollution; keep products and materials in use; regenerate natural systems.”²

Business organizations’ approaches to circular economy are based on the concept of circular business model that “articulates the logic of how an organization creates, delivers, and captures value to its broader range of stakeholders while minimizing ecological and social costs.”³

In our study of approaches taken by different companies in Bosnia and Herzegovina with respect to circular economy and their implementation of circular activities, we used five business models identified and described in the Circular Economy Handbook:⁴

M1 – Circular inputs inputs is a business model that is based on use of renewable and bio-based energy and innovative materials in production, aiming to significantly reduce or completely eliminate waste.

M2 – Sharing Platforms is a business model where the main principle is the use of a product or asset by shared ownership, access or utilization.

M3 – Product as Service is a business model where the benefit from the use of certain products is sold as a service, i.e. instead of owning a product, the customers are offered access to the product for a fee.

M4 – Extended use of products and product life is a business model where the life of the product is purposefully extended by redesigning or innovating the product, repairing or adapting, using its components, upgrading and selling in secondary market.

M5 – Resource recovery is the most widespread model of circular economy where waste is used as the primary resource for developing or making a new product.

¹<https://youmatter.world/en/definition/definitions-circular-economy-meaning-definition-benefits-barriers/>

²ibid.

³<https://www.boardofinnovation.com/circular-economy-business-models-explained/>

⁴Lacy, P., Long, J. & Spindler, W., The circular economy handbook: Realizing the Circular Advantage”, Palgrave Macmillan, Springer Nature Limited, London, 2020.

CE business models and activities in BiH and the region

In Bosnia and Herzegovina, 72 companies have been identified as those that implement some form of circular activities,⁵ along with 62 examples of circular activities in the region (mostly in Serbia and Croatia) that are not implemented in our country. Distribution of identified examples by different circular business models is shown in the charts “Examples in BiH” and “Examples in the region”. There is a detailed presentation of 11 examples from BiH and 33 examples from the countries of the region that could realistically and justifiably be implemented in BiH.

Most companies implement model M5 – Resource recovery. In most cases, it involves the management and treatment of various types of waste, recycling and utilization of waste. The most advanced models of circular economy do not have significant presence in Bosnia and Herzegovina. The majority of analysed companies implement circular activities as additional processes, i.e. they are not integrated circular economy business models.

Selected cases of CE activities and models in BiH

Based on the analysis of secondary sources, we selected 11 companies for further examination based on relevant information on their circular activities that were obtained from them in structured interviews.

M1 – Circular inputs

Wool-Line d.o.o. is a company manufacturing products made of wool without generating any waste. Five years ago, **they started the innovative production of insulation panels made of wool for use in construction.** This is a high-quality product made of natural materials that replaces insulation panels made of EPS⁶ and mineral wool, and is one of key elements in the process of construction sector transition to circular economy and construction of “green” buildings.

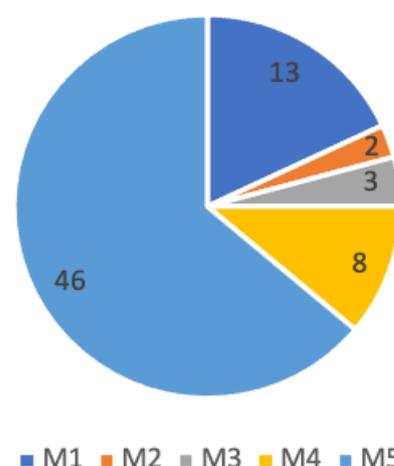
Maja Halilović is a designer from BiH who works on her own project of developing an innovative bio-material produced by bacteria - SCOBY (*symbiotic culture of bacteria and yeast*). The material thus obtained can have different qualities and characteristics, and can be modified, tailored, sewn, moulded, etc. Biofilm can be used in place of plastic to produce shopping bags, artwork, or packaging.

M2 – Sharing platforms

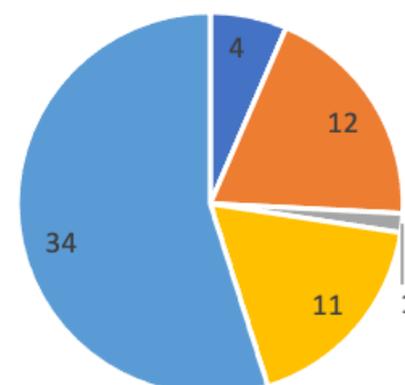
Kudces.ba is a sharing platform (shared use) for cars, which was started in 2016 for the purpose of connecting drivers who have free space in their cars with other passengers who need to travel in the same direction. It was inspired by the good experiences of global applications, such as BlaBlaCar.⁷

Nextbike was founded in 2004 in Germany, and so far, it successfully expanded bicycle sharing in 300 cities in 28 countries. The Supermarket marketing agency used their own funds and the funds received through private sponsorship to start the NextBike BiH project in Sarajevo in 2016, in Zenica in 2019, and in Vogošća in 2020.

Examples in BiH



■ M1 ■ M2 ■ M3 ■ M4 ■ M5



Examples in the Region

■ M1 ■ M2 ■ M3 ■ M4 ■ M5

⁵The examples identified here are not an exhaustive list of companies that apply circular activities in Bosnia and Herzegovina.

⁶EPS – expanded polystyrene, colloquially known as Styrofoam.

⁷<https://www.blablacar.co.uk/>

M3 – Product as service

Ecoton has been refurbishing ink cartridges since their establishment in 1997 (model M4 – Extension of product life), and expanded their offer in 2014 to include printer renting services. Ecoton developed a platform that enables monitoring of all printers in the network, and helping customers to monitor consumption by individual users, which allows them to optimise the printing process.

M4 – Extending the time of use of a product and product life

Lucius d.o.o. provides services of recycling and disassembling, with emphasis on electric and electronic waste, they use their own machines and facilities to recycle motherboards, cables, electro motors and other industrial and home appliances, and they separate precious and non-ferrous metals. Particularly important segment of operation is separation from the waste and the separate selling of some electronic and electric products that are in working order.

Wood Surgery is a business that repairs and redesigns old furniture. The owner recognized the trend of circularity and the demand for quality designer solutions and unique pieces of furniture, and started adapting and repairing used furniture thus contributing to reducing pollution, less demand for primary resources, and the protection of environment.

M5 – Resource recovery

Natron-Hayat is one of the major producers of kraft paper and packaging materials in the region. Their circular activity involves the recycling of old paper. In this production line, old paper and cardboard are turned into pulp, which is then purified and freed of dyes, and finally turned into paper by mechanical processes. Every year, 25,000 tonnes of inputs are processed on the old paper line to produce 18,000 tonnes of product, most of which is sold in the domestic market.

Elektro Tim was established in 2009, and their primary activity is the engineering and production of light fixtures and decorations, as well as lighting control. The Elektro Tim's circular activity involves the use of waste material of PET bottles, which are collected on a specific micro-location, and turned into elements of the New Year's decorative lights made and installed by this company.

Aida Commerce is a company whose core business is purchase and recycling of secondary materials, primarily metallic secondary materials and car batteries. The company plans to expand their business to include electronic and electric waste, separation of plastic and milling it into granulates, while at some later phases, the company may start separating usable inputs and selling them abroad.

Lukavac Cement d.o.o. is one of the most modern cement factories in Europe. Cement production process offers a unique opportunity to use various types of waste materials, which can no longer be used or recycled, as energy source in place of fossil fuels. All the ash that remains after incineration of RDF is integrated in the finished product (clinker), so that, in accordance with the principle of circular economy, no waste is generated. The production also accepts the waste from nearby companies - slag and ashes from steel factories, industrial gypsum and earth from the excavation not used otherwise, etc. They plan to establish industrial symbiosis with the Soda Factory Lukavac since the two factories use different component of the same resources and there is a clear potential to achieve its full use in such symbiosis.

Obstacles, restrictions and incentives to circular activities

Based on the study and interviews with the representatives of selected companies, it may be concluded that the economy of BiH is in the initial phase of transitioning to circular economy, and even though there are examples of companies that implement some circular activities, those are often auxiliary and not very sophisticated. The companies underline seven most important obstacles to expansion of circular activities: lack of finances, lack of incentives, lack of understanding of circular economy concepts, lack of internal capacities, complex administrative and legal procedures, difficulties in providing inputs, and complex import procedures.

Examples of Circular Economy Business Models in the Region

Analysis of secondary sources identified 33 examples of circular activities in the countries in the region that could potentially be replicated in Bosnia and Herzegovina.

M1 – Circular inputs – In the countries of the region, there are numerous examples of development and use of **biomaterials** in innovative business ideas. This primarily involves the production and use of specific bio-degradable products as substitutes for products from non-renewable inputs. Four presented examples from the region: the production of biosporin as replacement material for expanded polystyrene (Styrofoam) in the production of packaging, the growing of mushrooms by using specific, widely available waste, the chemical treatment of waste, the production of environmentally friendly shopping bags that can be composted, and the production of wood-based packaging materials, all of them having a strong potential for implementation in BiH.

M2 – Sharing platforms – There are numerous examples of digital sharing platforms in the region allowing the shared use of cars, bicycles, electrical scooters, etc. As for the shared use of cars, that does not yet exist in Bosnia and Herzegovina, there are only examples of ride-sharing. Shared use of bicycles and electric scooters exist in only a few cities in Bosnia and Herzegovina. Examples from the region show the rationale for including local communities in designing the needed infrastructure. This includes parking stations and safe bike lanes, encouraging adoption of new habits among population, subsidizing part of the costs of use in order to mitigate traffic jams and to improve the efficiency of public transport. There are not many examples of shared use of tools, machines, small home appliances or sports equipment. One example that shows potential for sharing use of tools and machines in local community without using a digital platform is the **Knjižnica Alata (Tools library)** from Beli Manastir, while the **Knjižnica Reči** in Ljubljana facilitates the shared use of various tools, devices and equipment through an online portal.

M3 – Product as service – This model is not used so much in Bosnia and Herzegovina or the region. The presented example of self-service laundry from Zagreb (**Wash&Go**) shows the economic viability of such businesses in larger cities - particularly urban centres where many residential units are small (the problem of space), and the population is mobile and does find it cost-effective to buy their own washing machines (students or the like). Even smaller communities, with limited purchase power, can be considered the appropriate market niches to ensure the financial sustainability of such enterprises.

M4 – Extending the product durability and product life – There is a significant number of examples of the **use of food after their best before date** by way of digital platforms for connecting those who have the surplus of food products and those who need them. In addition to reducing food waste, the positive social impact includes donation or sale at reduced price of the unused food. Presented examples show that initiative in most cases starts from retail chains, but also from the associations that provide platforms for establishing contact between various food donors and food users. Several examples of local communities providing incentives to extend the durability of household products and products for personal use through the local second-hand markets were identified in the region. Separate collection of various types of waste enables different entities, such as social cooperatives or companies collecting and treating waste, to effectively engage in sorting the collect waste, separating usable product, repairing, refurbishing and selling them at affordable prices. In Bosnia and Herzegovina, such circular economy activities may be encouraged by providing local community support and by making investments into containers for separate collection of various types of waste.

M5 – Resource recovery – There are numerous examples of **resource recovery** in the region, mostly involving recycling of different types of waste and using it for making new products. In several showcased examples, circular activities have been developed on the initiatives of various associations aiming to improve economic and social status of people with disabilities, unemployed women, marginalised groups, through public-private partnership and support from EU funds and by international donors. Most of such examples involve recycling of textiles. The presented examples of recycling soap, car tyres and glass can also potentially be implemented in Bosnia and Herzegovina.

Sectors in focus

Priority sectors for expansion of CE in Bosnia and Herzegovina

Bosnia and Herzegovina has significant potential to develop circular economy, particularly in the following sectors: waste management, fashion industry, consumer goods and household appliances, and construction. Sectors were assessed against three groups of criteria - supply chain, demands of buyers/markets, and economic/regulatory aspects, and this assessment, combined with recognition of conditions that are relevant for Bosnia and Herzegovina, as well as the knowledge gained by analysing CE activities in BiH and the region, enabled identification of the sectors that have the greatest potential for introducing CE activities and business models. Opportunities for implementation of CE in waste management sector are seen mostly in larger share of waste that is processed and recycled, use of innovative technologies and raising the degree of processing, and creating industrial symbiosis. In BiH fashion industry, circular economy could be implemented by using circular materials manufactured from waste, establishment of CE textile production clusters, and by shifting focus of the consumers. In the sector of consumer goods, BiH needs to implement eco-design of products, ensure maximum usability and recyclability of packaging, and effective use of energy and water in the production process.

With respect to household products in BiH, circular economy could be achieved by extending product life, ensuring warranties and repair of the product, and organizing resource recovery from discarded products. In the construction sector, CE could be implemented by improving energy efficiency and green construction, and the recycling and reusing the construction waste. For each sector, a detailed analysis was made of opportunities for expanding CE activities and models, as well as the characteristics of companies that could effectively make use of such opportunities.

In these sectors, the potential for implementation of the M5 business model - resource recovery is the strongest, followed by M1 - circular inputs, and M4 - extending the time of use of a product and product life. The M5 model is actually the model that is most frequently found in those BiH companies that implement CE principles, albeit partially. Generally speaking, there is a notable trend of increase in number of companies operating on CE principles in BiH, and shifts in market demand (particularly the EU) will additionally speed up this trend.

Analysis of value and supply chains

Global supply chains have been exposed to major shocks and changes over the last several years. Transition to circular economy that is focused on retaining the value of resources at the highest possible level significantly impacts the supply chain and value chain. The trade war between the USA and China, as well as the widespread shortages of various products during the COVID-19 pandemic, combined with higher prices of marine transport slowed down the globalization processes, and brought about transition to a multipolar system where countries get together in smaller groups whose trade and economic strategies do not follow the same direction of other global power centres.⁸

Introduction of tax on CO2 emissions, which the European Union plans to gradually introduce as of 2023 (CBAM), will also have **significant influence on global supply and value chains, primarily in the generation of electricity, the production of cement, steel and fertilizers.** In 2017, China “closed” the door for un-sorted, insufficiently sorted and low-quality plastic waste, and this impacted world supply and recycling chains, and generally the waste management. In fashion industry, expansion of “fast fashion” resulted in gradual move of production from Asian countries to the countries that are nearer to the end consumers in order to be able to respond more quickly to new trends and market demands. Changes in value and supply chains in sectors of consumer goods and household products were caused by development of the “Internet of Things” (IoT), robotization of production and the analysis of great quantities of data. In the construction sector, modular construction systems and 3D printing contribute to change of the established construction methods.

All these **changes in global supply and value chains have potential to help transition towards circular economy.** Bosnia and Herzegovina, due to its reliance and proximity to the European Union market that aims for self-sustainability, has an opportunity to speed up its economic growth and increase welfare if it accepts circular economy in time.

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⁸<https://www.morganstanley.com/ideas/coronavirus-global-geopolitics-investing>



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