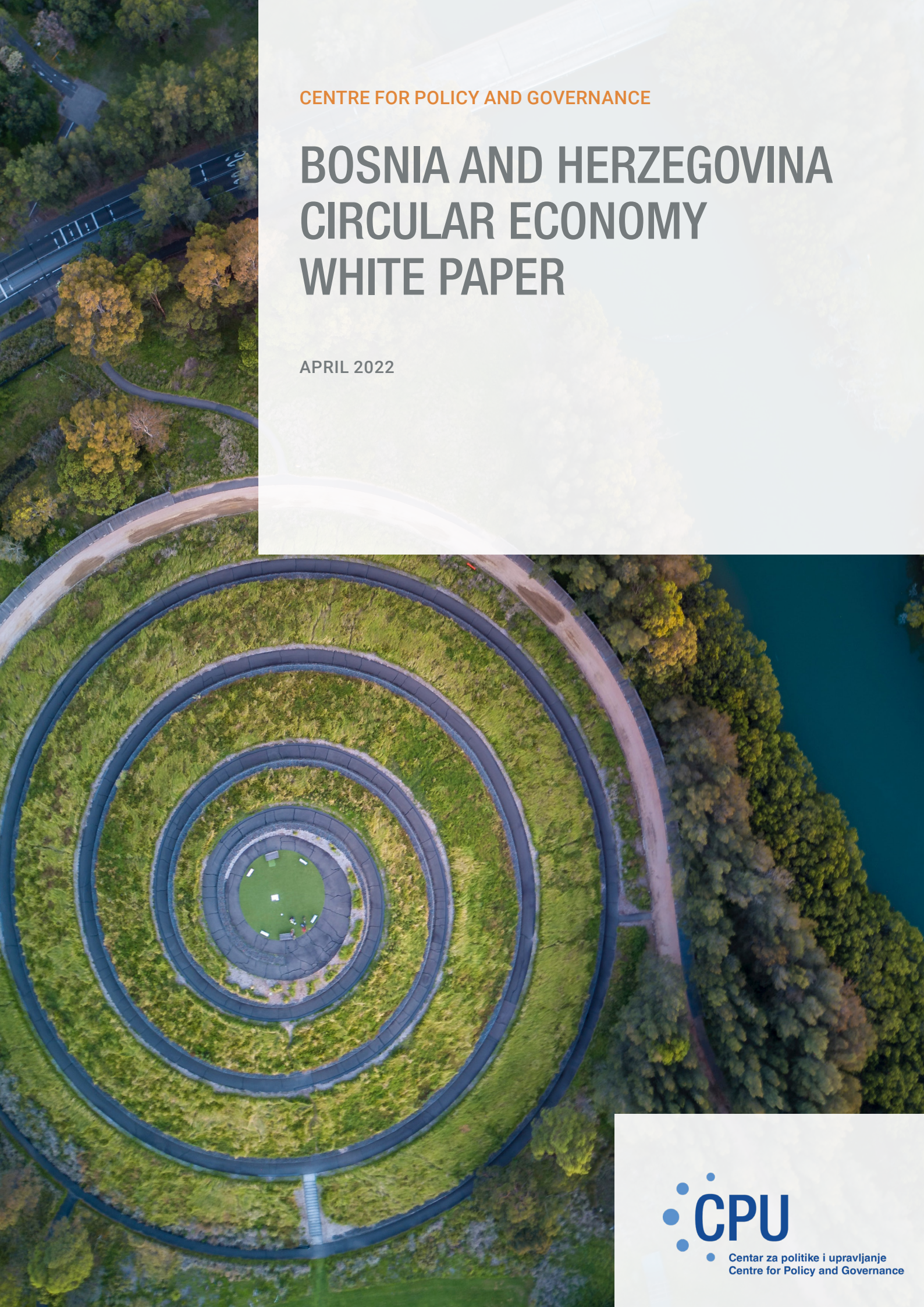

CENTRE FOR POLICY AND GOVERNANCE

BOSNIA AND HERZEGOVINA CIRCULAR ECONOMY WHITE PAPER

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Authors

Haris Abaspahić, Vedad Suljić, Medina Garić, Sabina Krupić

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Summary

Why circular economy?

Use of natural materials has been growing continuously in the world. With the current growth rates and population increase rates, global demand will in 2050 require resources of three planets like ours. Current increase in demand, limited supply of certain resources and disrupted supply chain cause a significant increase in prices and threaten to give rise to a new economic crisis, demonstrating the fact that the current models of the use of resources are far from being sustainable, while they may potentially cause instability.

To prevent catastrophic consequences of accelerated resource consumption for the humanity, societies and economies across the world have been adopting structural changes in order to reduce their environmental impact (pursuant to obligations accepted under the Paris Agreement on Climate Change, and reaffirmed in the Glasgow Climate Pact of 2021). With its 2020 Green Deal, the EU puts climate change in the epicentre of their long-term development plans, thus making commitment to become the carbon neutral continent by 2050. Transition to circular economy is an important element of this plan.

What is circular economy?

Circular economy is a concept that aims at decoupling economic growth from resource use, i.e. at achieving the "zero waste" economy. As opposed to the extraction industry model "take-use-discard," circular economy is based on the "reduce-repair-reuse-recycle" model. Circular economy is often confused with waste management, i.e. recycling, which is only the last phase in life cycle of a product, while in fact this concept is about prevention of waste generation and pollution in all phases of life cycle.

In addition to environmental benefits, circular economy has a strong potential for creating economic and social values. The Accenture estimates that CE can create value of around 4 trillion Euro by 2030. Transformation towards CE in the EU has the potential to contribute to GDP growth in the EU with additional 11% by 2030, and 27% by 2050. Business models for creating circular values are shown in the following illustration.

Business models for creating circular values

CIRCULAR INPUTS	SHARING PLATFORMS	PRODUCT AS SERVICE	EXTENDED USE OF PRODUCT	RECOVERY OF RESOURCES
Inputs that may be recycled are used in production process to contribute to partial or complete waste reduction (e.g. renewable energy and innovative materials)	The rate of the use of product is optimized by sharing ownership, access and use, frequently with the help of digital technologies (e.g. vehicles, accommodation, work space, equipment, etc.)	Companies retain ownership of its product and sells its use as service via subscription or lease, and also retains responsibility for the maintenance of the product and its treatment at the end of its life cycle.	Life of the product is extended by adjusting design, making repairs, using component, upgrading the product, and later by selling it in the secondary market.	Value of materials or energy is retained by means of collection and processing after the use of product by recycling, its use in the production of higher value products (*upcycling*) or lower value products (*downcycling*).

Regional perspective

With the adoption of the Western Balkans Green Agenda in 2020, the Western Balkan countries adopted the European Green Deal (its key elements), making commitment to implement measures and achieve compliance in five areas, one of which is circular economy. For small, open economies such as the ones in Western Balkans, which are close neighbours to the EU that is a global leader in climate initiatives, access to the EU market and expected financial assistance from the EU will critically depend on the progress achieved in the transition towards green economy. EU is the largest trade partner to all Western Balkan countries, with the share of 70% in total trade in the region.[1]

Transformation of resource-intensive industry in the Balkan countries towards green and circular economy is not a simple task. Brown industries here have a long tradition, employ a significant share of labour force, and also have developed value chains and market infrastructure. Cheap primary resources, when excluding the externalities, combined with relatively cheap labour force, provide to this region a comparative advantage in many sectors and attract foreign investments.[2]

Initial prerequisites for circular economy in BiH

Being resource-intensive economy, BiH has potential to achieve significant economic benefits by implementing the circular economy model. In 2019, the average 11.5 tons of natural resources were consumed per capita, compared to the EU average of 14.5 tons per capita. Resource productivity (ratio between gross domestic product and domestic consumption of resources) in BiH (0.9) is significantly below the EU average (2.2). In BiH, 2.2% of the generated waste is processed, while the exports of non-hazardous waste are close to 28 times its imports. Although there is no systemic approach to circular economy in BiH, in recent times there has been an evident increase in initiatives and support to CE in BiH, including the creation of strategic and regulatory framework.

Numerous BiH companies include in their operations, to a larger or smaller degree, some elements of circularity, suggesting that some of the prerequisites for progress in this area are there. In the Case study - Implementation of Circular Economy Business Models in BiH, which was developed within this project, several examples of companies that implement circular activities have been identified. Some of the companies have recognized CE as their primary business model (e.g. Lucius, Kudces.ba, the Bio-design project), other companies use CE to complement their core business (e.g. Aida Commerce, NextBike), while other companies, due to their close links with international markets and owners, follow advanced models, including the CE model (e.g. Natron-Hayat, Lukavac Cement).

Barriers and incentives to development of circular economy in BiH

Transition towards CE is inhibited by the current "linear" legislation, markets, investment tools and practices. These barriers prevent the economy to reflect the real cost of negative environmental impacts in the price of their goods and services. As part of this research, the authors analysed groups of barriers to development of circular economy in BiH (regulatory, financial, organizational, technological and consumer-related barriers).

In consideration of EU good practices and specific characteristics of BiH economy, we have identified several incentives for circular economy that are feasible in BiH, and that should aim to create value, reduce risk and enhance competitiveness of CE supply chains. Decision-makers should design and implement incentives commensurate to the desired impact, size, scope and time of implementation.

Priority sets of incentives that have been thoroughly analysed in the White Paper include:

01. Improving legislation regulating circular economy
02. Fiscal incentives for circular economy
03. Introduction of full price of waste management costs
04. Green public procurement
05. Education and awareness-raising programmes to motivate sustainable consumption

[1] World Bank, Western Balkans regular economic report – Greening the recovery, 2021

[2] Ibid

Introduction

Climate change and environment pollution cause disappearance of flora and fauna, the degradation of eco-system, more waste, and scarcity of natural resources. In order to prevent catastrophic consequences of climate change and increased environmental pollution to humanity, we will have to radically change the way we have been producing and consuming.

Over the past 50 years, the use of natural materials tripled on global level. By 2050, the current level of demand for primary resources could be doubled in order to maintain the current level of economic growth. With the current trend in population growth, **by 2050 we will need almost three planets** (in the context of resource availability) in order to maintain the existing production and consumption patterns. Around half of total emissions of greenhouse gases and more than 90% of biodiversity and water losses can be attributed to extraction of resources and processing of materials, fuels and food. Globally, while **only 8.6% of used materials are recycled** and put back in use.[3]

Pursuant to obligations accepted under the Paris Agreement on Climate Change, which were reaffirmed in the Glasgow Climate Pact of 2021, **societies and economies all over the world are undergoing structural changes**, by adjusting their production models, consumer habits, and investment decisions accordingly. Developing countries who fail to adapt their developmental policies to the green priorities will have fewer opportunities to find partners and finances for their development projects. Products based on intensive consumption of primary resources will have harder time in reaching markets, and be less and less competitive because fees for non-compliance with environmental standards are certain to expand.

The pandemic has significantly disrupted global supply chains, and the businesses shifted their focus to the use of resources that are geographically nearer and more easily accessible, i.e. to more resilient resources. **Current increase in demand, limited supply of certain resources and disrupted supply chains** have caused a significant increase in prices, threatening to give rise to a new economic crisis, thus demonstrating the fact that the current models of resources use are far from being sustainable, and may potentially cause instability.

[3] Circle Economy, The Circularity Gap Report 2020

CONCEPT OF CIRCULAR ECONOMY

The core **CE ideas emerged** in the **1960s**. Since then, this concept has been considered in various economic, political and cultural environments, from local to global levels, resulting with various definitions and, consequently, various approaches to CE. In scientific literature alone one may find more than 110 different definitions of CE.

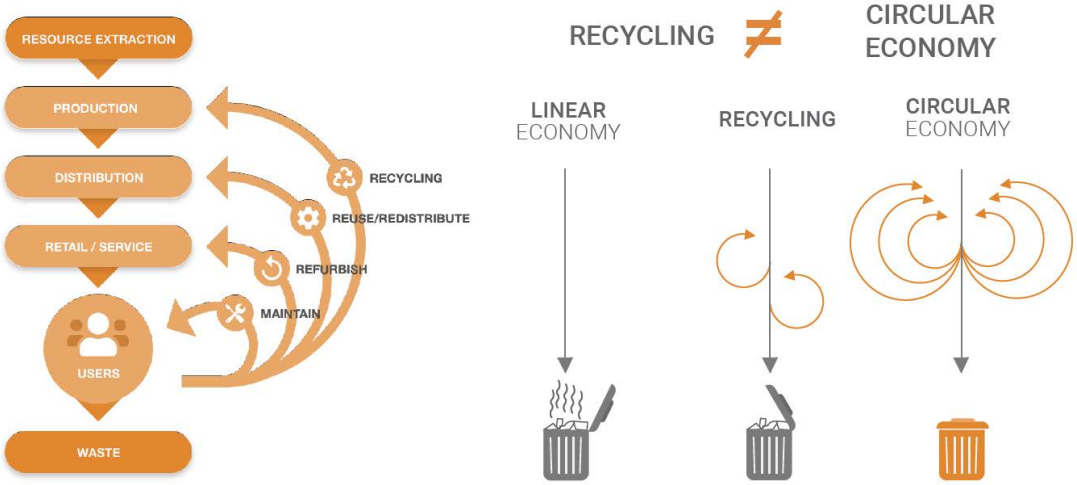
For the purposes of this document, we used the definition of the Ellen MacArthur Foundation:

Circular economy strives to gradually decouple economic activity from consumption of limited resources, with the ultimate goal of achieving economy that generates "zero waste". As opposed to the extraction industry model "take-use-discard," circular economy is based on the model "reduce-repair-reuse-recycle". Circular economy model contributes to development of economic, natural and human capital, and is supported by transition towards renewable energy sources. It is based on the following principles: (1) design that eliminates waste and pollution, (2) circulate products and materials, (3) regeneration of nature.

REDUCE
REPAIR
REUSE
RECYCLE

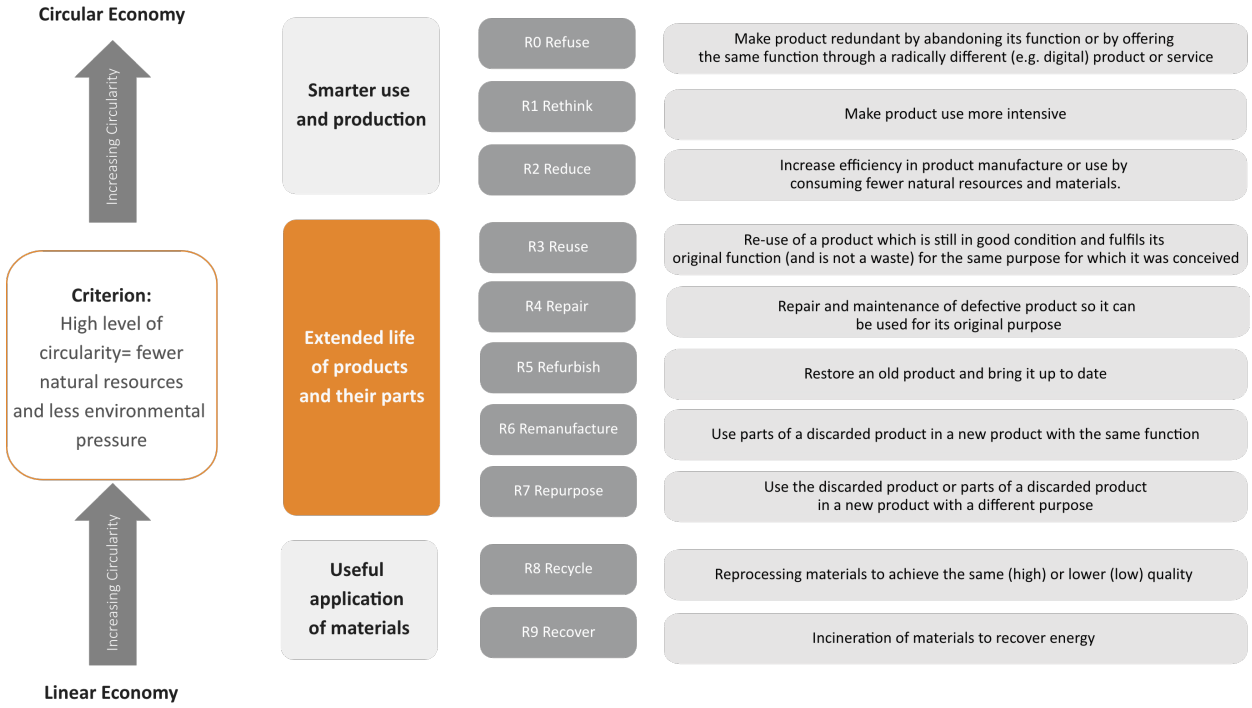
Circular economy is often wrongly identified with waste management, i.e. recycling, which is only the last phase in the life cycle of a product, while the CE aims to prevent waste generation and pollution in all phases of the life cycle. The waste that is irrevocably deposited on landfills may become a valuable resource, although, in an ideal model of circular economy, it should not exist at all. In the countries that are just embarking upon the transition towards green and circular economy, effective waste management and increasing the rate of recycling are important elements of these processes. The following illustrations depict the CE model throughout the product life cycle, as well as the difference between recycling and CE.

Circular economy model throughout the product life cycle, recycling vs. CE



There is a series of analytical frameworks to conceptualize elements or processes in CE. Frequently used 9R[4] approach provides a comprehensive framework for circularity strategies within production chains, wherein its elements are shown in order of priority in the context of the scope of circularity.[5] A tabular overview of the 9R framework is given below:

9R model of circular economy strategy



In the 9Rs model, higher circularity has a more positive impact on environment. The materials should remain in circulation for as long as possible, and reused when the product becomes obsolete and, whenever possible, the same quality and usability should be maintained. Sustainable manufacturing and smart use (including product-sharing) have greater effect on circularity than the extended life of the product.[6] The second best option is extension of the product life, and the next after that is recycling the materials through "refurbishment". Burning materials for energy generation/ recovery comes last on the list of priorities because at that stage the materials are no more available to return into the production process. There are exceptions to these rules - when increased circularity leads to greater consumption of resources and energy, fossil fuels in particular. For example, chemical recycling of contaminated plastic requires consumption of plenty of energy for decomposition of materials.[7]

The Circular Economy Handbook: Realizing Circular Advantage[8] **defines five business models for creating circular values,** which are not mutually exclusive (shown in the following illustration).

Business models for creating circular values

CIRCULAR INPUTS	SHARING PLATFORMS	PRODUCT AS SERVICE	EXTENDED USE OF PRODUCT	RECOVERY OF RESOURCES
Inputs that may be recycled are used in production process to contribute to partial or complete waste reduction (e.g. renewable energy and innovative materials)	The rate of the use of product is optimized by sharing ownership, access and use, frequently with the help of digital technologies (e.g. vehicles, accommodation, work space, equipment, etc.)	Companies retain ownership of its product and sells its use as service via subscription or lease, and also retains responsibility for the maintenance of the product and its treatment at the end of its life cycle.	Life of the product is extended by adjusting design, making repairs, using component, upgrading the product, and later by selling it in the secondary market.	Value of materials or energy is retained by means of collection and processing after the use of product by recycling, its use in the production of higher value products (*upcycling*) or lower value products (*downcycling*).

[4]Potting at all, , Circular economy: Measuring innovation in the product chain, 2017
[5]Ibid
[6]Ibid.
[7]Ibid.
[8]P. Lacy, J. Long, W. Spindler, The circular economy handbook: Realizing the Circular Advantage, Palgrave MacMillan, London, 2020.

Digital technologies offer several solutions that support the creation of circular value. Full implementation of CE requires systems that will manage to collect and process large quantities of data in all phases of product cycle. Digital solutions may provide real time data on location, shape and availability of product, increase product traceability, facilitate access to products and services, and make the processes more practical and efficient. The collected data are used to support the decision-making process regarding design, production and consumption for the purpose of preserving value of the materials.

EU AND CIRCULAR ECONOMY

Fighting climate change is the main priority of long-term development plans of EU. Transition to CE is an important element of such plans in order for Europe to become a carbon neutral continent by 2050, to decouple economic growth from resource consumption, and to ensure a just transition for all locations and people. As a signatory to the Paris Agreement - Agenda for fighting climate change, the EU adopted a range of strategies, plans and directives aimed at enhancing circularity of the EU economy, which include: The European Green Deal, two Action Plans for circular economy, Taxonomy for Circular Economy, Extended Producer Responsibility, Work Plan of the Directive on Eco-Design, New Industrial Strategy for Europe, etc.

Changes in the method of production and consumption are key elements of circular transformation in EU. This transformation is not restricted to the EU alone; it will also have significant positive, but also some negative "spill-overs" outside the borders of EU.[9] International trade has an important role in this context. It is to be expected that higher circularity in EU economy will impact the trade flows (e.g. reduce demand for primary material inputs or reduce offer of secondary material inputs). Trade agreements may have an important role in encouraging or stimulating circularity of the flow of materials at international level.[10]

Carbon Border Adjustment Mechanism (CBAM) that was adopted by the European Commission in June 2021 prescribes customs duties on carbon intensive products on EU borders, unless taxed in the country of origin. In the first phase, this shall apply to electricity, cement, fertilizers, steel and aluminium. The new rules shall enter into force in 2023, and customs duty (in the form of purchasing CBAM certificates) is tol be paid as of 2026 by all importers in accordance with their declared annual volume of goods imported to EU and the total involved carbon emission, unless the carbon had already been taxed in the country of origin through the ETS system. The scope of this mechanism is certain to expand further to include imports of other resource-intensive products.

For small, **open economies as the ones in the Western Balkans, which are close neighbours to the EU**, the global leader in climate initiatives, access to the EU market and expected financial assistance of the EU will critically depend on the progress achieved in transition towards green economy. EU is the largest trade partner of all Western Balkan countries, having the 70% share in total trade in the region. Over the past 10 years, trade between EU and the Western Balkans increased by 130%.[11]

[9] Institute for European Environmental Policy (IEEP), EU trade, CE and sustainable development, 2019
[10] Ibid.
[11] The World Bank, Western Balkans regular economic report – Greening the recovery, 2021

Transformation of resource-intensive industry in the Balkan countries towards green and circular economy is not a simple task. Brown industries and technologies have had a long tradition, and provide a significant number of brown jobs and skills, with developed value chains and market infrastructure. Reliable and cheap primary material inputs, when externalities are excluded, combined with relatively cheap labour force, provide to this region a comparative advantage in many sectors and attract foreign investments.[12]

With the **adoption of the Western Balkans Green Agenda in 2020, the Western Balkan countries adopted the European Green Deal** (or rather, its key elements), undertaking to implement measures and achieve compliance in five areas, one of which is circular economy. In October 2021, the Regional Cooperation Council announced the Action Plan for the implementation of the Sofia Declaration that is to serve as guide to the decision-makers in the process of implementing the Declaration.[13]

In October 2020, the European Commission identified the **Economic and Investment Plan for the Western Balkans**, which is to **provide up to 30 billion euro**, with the aim of supporting sustainable connectivity, human potentials, energy, green transition and digital transformation. One of key pillars of this plan is support to the implementation of Green Agenda for the Western Balkans, and thus to the circular economy-related initiatives.

[12] Ibid.
[13] The Regional Cooperation Council - Action Plan for the Implementation of the Sofia Declaration on the Green Agenda for the Western Balkans 2021-2030

BENEFITS OF CIRCULAR ECONOMY

The CE models bring along great potential for creating new economic, environmental and social values. Here follows an overview of those key benefits.

ECONOMIC BENEFITS

Transition to circular business models brings along significant economic benefits: (1) at macro level - growth in GDP, scope of production and employment; (2) at company level - reduced business costs, enhanced competitiveness and support to innovation.[14]

The Accenture estimates that, globally, CE can create value of around **4 trillion euro by 2030**.[15] Transformation towards CE in the EU has the potential to contribute to the creation of net benefit in the amount of **1.8 trillion euro** that can be achieved by 2030, thus contributing to **EU GDP growth with additional 11% by 2030, or 27% by 2050**.[16]

The Accenture estimates that, globally, CE can create value of around **4 trilion Euro** by 2030.

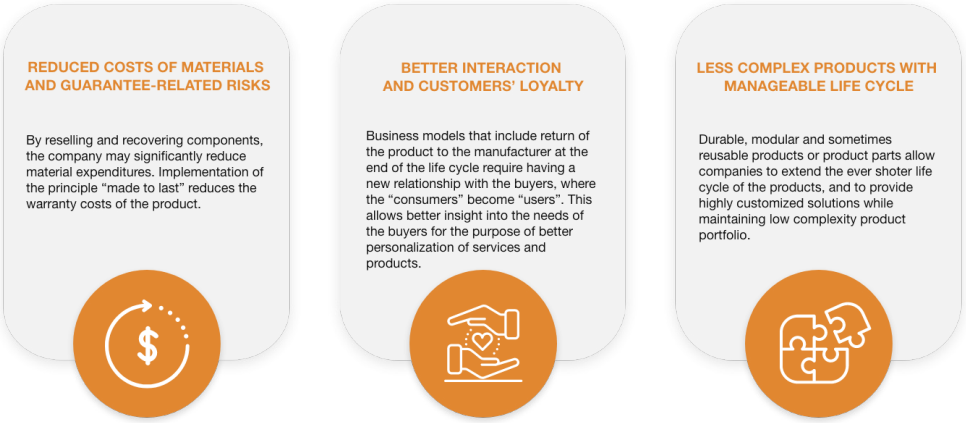
The European Environment Agency estimates that just by saving materials in manufacturing, 600 billion euro can be saved by the end of this decade. Taking into consideration the growing trend in the prices of materials, reduced consumption of primary materials would, besides reducing costs, also mitigate the risks related to market price sensitivity.

The Ellen MacArthur Foundation estimated that in the sector of complex products of medium life expectancy in EU the annual opportunity for net savings of materials in the scenario of advanced circularity equalled up to 630 billion USD, while the general consumption goods were identified as offering additional potential of 700 bl. USD globally. New business opportunities and development of new markets through circular activities: repair, reuse or recycling generated around 155 billion euro of additional value in the EU by the end of the last decade.

New business opportunities and development of new markets through circular activities: repair, reuse or recycling generated around **155 bilion euro** of additional value in the EU by the end of the last decade.

Moving towards the CE model, in addition to reducing the demand for primary materials, would also create the **need for adopting new business models**, such as the reverse logistics model,[17] sales platforms that provide for longer life and usefulness of product, and refurbishment of product to be used again. They contribute to improved customer relations: rent or leasing, or transition from delivery of products to delivery of services etc., imply frequent communication and the opportunity for the companies to get to know better their markets and customers' behaviour.

Key benefits of circular economy for companies



Source: Ellen MacArthur Foundation, Towards a circular economy: Business rationale for an accelerated transition, 2015

[14]https://www.researchgate.net/publication/281965190_Circular_Business_Model_Innovation_Inherent_Uncertainties
[15]Ibid.
[16]Ellen MacArthur Foundation, Towards a circular economy: Business rationale for an accelerated transition, 2015
[17]Where the products are collected, repaired, and re-distributed after use to come back to the market.

EMPLOYMENT

The OECD study "Labour Market Consequences of Transition to Circular Economy" provides an overview of 47 scenarios from 15 econometric models, and concludes that **transition to resource-efficient CE generally leads to mild growth in employment** (between 0% and 2%). According to a study made by the International Institute for Sustainable Development (IISD) and the Finnish Innovation Fund Sitra, in the EU companies that apply the CE concept, the number of employees grew by the average 5% over the period 2012-2018. (1.3% in larger companies, and 8.4% in smaller companies).[18]

ILO Calculation of Job Reallocation

2,5M

new jobs in energy generation from RES

Effects of CE on employment vary by sectors. According to the OECD analysis of sectorial data on global level,[19] construction, food industry, primary metal and non-metal minerals, as well as the generation and distribution of electricity contribute with around 90% to the total global consumption of materials, while employing only 15% of labour force. A shift to a circular business model would cause limited loss of jobs in these traditional sector; however, this could be compensated by creation of new jobs in other sectors.[20]

According to the ILO[21] **by applying CE, most sectors will achieve net increase in employment:** out of 163 analysed sectors at the global level, only 14 will experience loss of around 10,000 jobs, while two sector, oil extraction and processing, suggest a loss of a million or more jobs.

400.000

jobs lost in energy generation from fossil fuels

For example, National Alliance for Local Economic Development (NALED), in the Programme for introducing CE in Serbia, estimates that the introduction of CE business model by 2023 would create 30,000 new jobs, primarily as a result of better use of food waste, as well as packaging, and electric and electronic waste.[22]

Investing into **just transition** through flexible welfare system and re-training programmes will be the key element in this shift in business and employment models. The Just Transition Mechanism is a key tool to make sure that the transition towards a climate-neutral economy is fair, leaving no one behind. The Mechanism provides targeted support to help mobilise at least €100 billion over the period 2021-2027 in the most affected regions, to alleviate the socio-economic impact of the transition. The Mechanism will create necessary investment to help workers and communities that depend on the fossil fuel value chain.[23]

ENVIRONMENTAL BENEFITS

Implementation of CE Principles in production and use of materials would significantly contribute to alleviating negative environmental impacts. Obviously, longer retention of materials in economy leads to reduced demand for extraction of primary resources and thus limits negative impact on environment. Also, reducing quantity of solid waste that ends up at the landfill by implementing some of 9R models would help mitigate negative environmental impact of landfills, while it can also be achieved by improving the landfills. Recycling of iron and aluminium also achieves significant energy savings compared to primary production of these metals. Here follows a table that provides an overview of impact of the use of materials on the environment and possible environmental benefits from transition to CE.

[18] The International Institute for Sustainable Development (IISD) and the Finnish Innovation Fund Sitra, Effects. 2020

[19] Organization for Economic Cooperation and Development (OECD), Labour Market Consequences of a Transition to a Circular Economy: A Review Paper – Environment Working Paper N°162, 2020

[20] Ibid.

[21] International Labour Organization (ILO), World Employment and Social Outlook 2018: Greening with Jobs

[22] https://naled.rs/vest-cirkularna-ekonomija-sansa-za-vise-od-30000-novih-radnih-mesta-3983

[23] European Commission, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_17.

Overview of the impact of use of materials on the environment and possible environmental benefits from transition to CE

PRESSURES

- 62% of global emissions originate from extraction, processing the materials and manufacture of goods, while 38% originate from supply and use.[24]
- Demand for housing, food and mobility makes for more than 80% of current material footprint.
- In EU, construction industry consumes 40% of materials and 40% of primary energy, and generates 40% of waste.[25]
- 24% of globally useful land on Earth has been degraded, with the estimated economic loss of 36 bil. Euro per year.[26]
- Globally, around 300 ml tons[27] of plastic waste is being created every year.
- Illnesses caused by pollution of air, water and soil were responsible for 9 mil premature deaths in 2015, i.e. 16% of global deaths.

BENEFITS

- Circular economy has the potential to reduce industrial emissions in EU by 56% until 2050; in the food, construction, environment and transport sectors, this potential goes up to 81%.[28]
- Different combinations of targets for waste recycling and limiting landfilling may lead to reduction of greenhouse gas emissions by around 600 ml tons of CO2 until 2035.[29]
- Use of recycled materials would reduce demand for production of plastic and synthetic fibers, which will also mean less use of fossil fuels.
- Doubling the time of use of clothing garments would reduce emission of greenhouse gases from textile industry by 44%.[30]
- Replacing plastic with some other materials, designing plastic in a way that allows for easy recycling, and increased scope of collecting and recycling plastics, may result with 80% reduction in plastic waste in the oceans, and this would significantly impact health of people and biodiversity.[31]

SOCIAL BENEFITS

Generally, it is an accepted fact that CE brings along a number of social benefits, including additional employment, income, feeling of belonging to a community, social networking and improved inclusion, support to local democracy, education and training system, and improved safety at work, and reducing discrimination, increasing transparency in public sector.[32] For example, a good public policy that facilitates repair and longevity of the products and provides incentives to return of the old products may reduce unemployment and save people money. Effects of CE on employment are described in the previous chapter; however, there is a great lack of literature related to the quantification of other social benefits in this context.

[24]Circular economy, The Circularity Gap Report 2021
[25]Solís-Guzmán, J. Martínez-Rocamora, A., Marrero M., Methodology for determining the carbon footprint of the construction of residential buildings. In Assessment of Carbon Footprint in Different Industrial Sectors, Springer, Singapore, 2014
[26]ELD Initiative, A global strategy for sustainable land management; The rewards of investing in sustainable land management, 2013
[27]United Nations Environment Program (UNEP), accessible at: https://www.unep.org/interactive/beat-plastic-pollution/
[28]The Finnish Innovation Fund SitraThe Circular Economy a Powerful Force for Climate Mitigation, Transformative innovation for prosperous and low-carbon industry, 2018
[29]European Environment Agency (EEA), Circular economy in Europe, Developing the knowledge base, 2016
[30]World Resources Institute (WRI), available at https://www.wri.org/insights/5-opportunities-circular-economy
[31]Ellen MacArthur Foundation, Towards a circular economy: Business rationale for an accelerated transition, 2015
[32]Padilla-Rivera A., Russo-Garrido S., Merveille N., Addressing the Social Aspects of a Circular Economy: A Systematic Literature Review, MDPI, 2020

OPPORTUNITIES FOR TRANSITION TO CIRCULAR ECONOMY IN KEY SECTORS

Sectors like **construction, textile and processing industries** have the potential to achieve **significant benefits from implementation of CE models** in their business practices. The following table contains an assessment of potential for implementation of 5 CE business models in these sectors.

Evaluation of potential for implementation of CE model in key sectors



● High potential ○ Low potential	Construction industry	Textile industry	Processing industry (food and beverage)
Reduction	●	◉	●
Reuse	◉	●	○
Recycling	●	●	●
Repair	○	◉	○
Refurbishment	●	◉	○

Adapted from: Ellen MacArthur Foundation

Construction industry

Construction industry contributes to around 9% GDP in EU, and directly employs around 18 mil workers.[33] This sector **consumes close to 50% of all primary materials consumed, and makes for 36% of final energy consumption.**[34] In 2015, the EU generated 374 mil. tons of construction waste,[35] and usability of this waste was 89% on the average.[36]

Increased prices of primary materials used in construction result with higher demand for alternative ways to reuse or recycle the materials, thus contributing to lower costs of construction. Transition to CE in the construction industry includes the construction of sustainable buildings with elements of eco-design and building management, the choice of recyclable materials, improved energy performance and reduced environmental impact during the building life cycle.

The building sector in EU has the potential to reduce its greenhouse gases emission by 90% by 2050.[37] Through the Directive on Energy Performance of Buildings,[38] the EU sets the standards for improvement of energy performance of buildings, taking into consideration local conditions, requirements of the building, and cost efficiency. All new buildings should be "almost zero-energy buildings," i.e. buildings with high-energy performances, or low energy needs.

[33]European Commission, The European Construction Sector, DG GROW, March 2016
[34]Journal of Building Engineering, Circular economy in the building and construction sector: A scientific evolution analysis, 2021
[35]European Environment Agency (EEA), Construction and Demolition Waste: challenges and opportunities in a circular economy, 2020
[36]Data Europa, accessible at: https://ec.europa.eu/eurostat/databrowser/view/cei_wm040/default/bar?lang=en
[37]European Commission, A Roadmap for moving to a competitive low carbon economy in 2050, Brussels, 2011
[38]European Commission, Directive 2010/31/EU of the European Parliament and of the Council on the energy performance, 2010

Choosing **deconstruction** as opposed to **demolition** of houses built in the 1950s or the 1960s in the United States **reduced the volume of waste deposited to landfills by up to 76%**, avoiding related costs of landfilling, and separating valuable construction components and materials for recycling and reusing. The deconstruction case studies demonstrated significant social benefits, including increased demand for labour force, and better conditions of work and employment.[39]

Textile industry

Production of clothes from synthetic fibres consumes **large quantities of fossil fuels.** In addition, textile production, including growing cotton plants, **consumes almost 100 billion m^3 of water annually, what is close to 4% of global consumption** of fresh water. At the same time, every year, 92 million tons of usable clothes get thrown away, worth around 410 billion euro.[40]

For textile industry, the implementation of CE models would mean **transition to the use of recyclable materials** in order to **reduce the amount of land, water and fossil fuels** consumed in production. This means the behavioural patters would need to change in order to limit purchasing new clothes and extend the useful life of clothes by increasing the market for second-hand garments' sale or rent, and changing the "fast fashion" culture. Ultimately, it must be made sure that the clothes are recycled at the end of its life cycle.

Textile production consumes almost **100 billion m^3** of water annually, what is close to 4% of global consumption of fresh water

One good example is DyeCoo, a textile company that has partnered with Nike and IKEA to develop a dyeing process that consumes no water, using instead high-pressure carbon dioxide, which can be recycled. The company can produce its product in half the time, using a fraction of energy the traditional method uses, and without straining water resources.

Processing industry

In 2020, processing industry participated with 19.4% in total GDP in EU, showing a trend of decline.[41] Processing industry participates with 11.5% in total emissions in EU; compared to 1990, this emissions produced in this sector went down by around 40%.[42]

For example, it has been estimated that **transition of German processing industry to circular models has a potential to reduce the cost of primary materials by up to 33%** by 2030.[43] The potential savings in this sector motivate the manufacturers to pay attention to the design of products in order to enable **more efficient use, longer durability and reuse of the parts, or recycling**. Generally, this approach opens the doors to the possibility to start new businesses that would do repairs, provide product as service, and recovery of resources to be used as production inputs. Primary inputs in processing industry should be obtained from sustainable and renewable sources. water, it also produces biogas that can be used for generating clean energy.

An example of good practice is the Dell company that produces Latitude laptops, designed with recycling in mind: their batteries are replaceable, locks are standardized, and the company also removed mercury and glue from the product. By doing this, the Dell company showed that they were capable of manufacturing laptops that can be recycled 97%. American company Cambrian Innovations purifies wastewater polluted in industrial processes, and not only turns it into clean water, it also produces biogas that can be used for generating clean energy.[44]

[39] Ellen MacArthur Foundation, Towards a Circular Economy: Business rationale for an accelerated transition, 2013
[40] P. Lacy, J. Long, W. Spindler, The circular economy handbook, Realizing the Circular Advantage, Palgrave MacMillan, London, 2020
[41] The Statistical Office of European Union (Eurostat), Key figures on Europe 2021 edition
[42] Ibid.
[43] Circular Economy Initiative Deutschland, Circular Economy Roadmap for Germany, 2021
[44] https://pit.ba/razlozi-uvodjenja-cirkularne-ekonomije-u-proizvodnoj-industriju/

DEVELOPING COUNTRIES AND BENEFITS FROM CIRCULAR ECONOMY

Over 80% of recourse-rich economies earn less than global average income per capita.[45] Developing countries have failed to maximize benefits of linear economy because they have not adequately used available resources in order to improve quality of life of their population. However, these countries typically produce far less waste than developed countries (e.g. sub-Saharan Africa produces only 5%, while OECD countries produce almost half of the world waste). Large quantities of waste from developed countries end up in the developing countries. For example, the UN estimates that more than 90% of used computers from developed world are exported to developing countries.[46]

59%
of waste in developing countries ends up in non-sanitary ("wild") dumping sites

Developing counties are often met with significant restrictions when attempting to apply the circular economy models because, typically, **they do not have a developed infrastructure or accumulated goods to recycle or repair.** Ellen MacArthur foundation identifies three areas that have significant potential to create value in developing countries:

Improving performances of waste collection and recycling

59% of waste in developing countries ends up in non-sanitary ("wild") dumping sites. The recycling work, often done by informal sector, is carried out by use inappropriate techniques that often seriously undermine health of the workers and cause environmental damage. There is a significant potential to improve environmental and economic performances in waste collection and recycling. For example, composting organic waste provides a sustainable alternative for phosphate fertilizers farmers often cannot afford, while it helps the creation of new jobs and livelihoods.

There are many examples of effective recycling of materials such as plastic, paper or glass into artisan products. Still, **many countries do not have adequate access to technology and investments that are required for transition from such small-scale to industrial recycling.** In order to overcome this problem, the African Development Bank provides financing for operation of collection of plastic waste and development of infrastructure needed for recycling in the Cote d'Ivoire. In addition to supplying materials for local industries, this project contributes to economic and social integration of around 2,000 demobilized soldiers.

Globally
15M
waste collectors operate in the informal labour market

When transitioning to circular economy, developing countries **may reduce the rate of informal employment.** Collection of waste, which is typically carried out by informal sector and in poor working conditions, can be organized in a way that contributes to transition of workers into the formal sector, what would result with the creation of sustainable jobs and reduction of poverty. Globally, 15 mil. waste collectors operate in the informal labour market, and the circular economy provides opportunity to improve their work conditions and transition into formal employment. For example, the Danone company in Mexico built a waste sorting facility, where the collectors can sort the waste more effectively and in a safer way, achieving an increase in income of 30%, as well as health insurance for 400 families.

[45] McKinsey Global Institute, Reverse the curse: Maximizing the potential of resource-driven economies, 2013.
[46] United Nations, Chemicals mining transport waste, Waste management

Strengthening the sector of product repair and refurbishment

As a rule, developing countries import large quantities of second-hand goods, such as electronic equipment and cars, from developing countries. Some of developing countries managed to implement **highly efficient recycling models**, while many other rely on the sector of repairing and refurbishing for the purpose of extending the life of the products.

For example, in Nigeria, 95% of all cars are imported second-hand cars.[47] Nigerian government is working with the Japanese Agency for International Cooperation to develop legislation on recycling cars at the end of their life-cycle, and to establish a car recycling system.

This practice of importing second-hand products from Europe or Northern America often **contributes to accumulation of waste in developing countries** due to lack of appropriate recycling infrastructure. For example, in Ghana, 80% of second-hand electronics (such as cooling and freezing equipment, computer equipment, television sets and mobile phones) are not recycled, but reused, repaired, refurbished or disposed of.[48]

Building resource-efficient value chains in agriculture

Developing countries can **significantly improve resource efficacy of their industry.** For instance, Malawi, Mozambique and Zambia have been experimenting with agro-ecology – the kind of agriculture that is not inspired by industry, but by nature. In Porto-Novo in Benin, a company called Songhaï developed a closed circular model where all agricultural by-products are re-introduced in the production process, and as a result, they produce 3.4 tons of rice per hectare, as opposed to one ton per hectare they get when they use traditional methods. In Brazil, the Nature, a cosmetics manufacturer, built an industrial park in Amazon region where they intend to develop closed circular system of selling cosmetic industry by-products originating from Amazon fruits, oils and berries to other companies that operate in complementary industries.

Effectiveness of agricultural value chain can also be improved. For example, production of 1 kg of green coffee produces 2.5 kg of by-products (pulp and skins).[49] This type of by-product is often released into rivers, negatively impacting environment and population, while that same by-product can be turned into various resources, such as animal feed, compost, bio-gas, but also beverages, vinegar, caffeine or proteins. Farmers in Central America turn the same type of waste into biogas, while in Columbia; large coffee farms use it as compost - i.e. organic soil conditioner.[50]

[47] Daily Times Nigeria, 2014.
[48] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 2011.
[49] African Development Bank, The Annual Report 2015
[50] UN Food and Agriculture Organization (FAO), The State of Food and Agriculture, 2006

OVERVIEW OF CIRCULAR ECONOMY STATUS AND INITIATIVES IN BIH

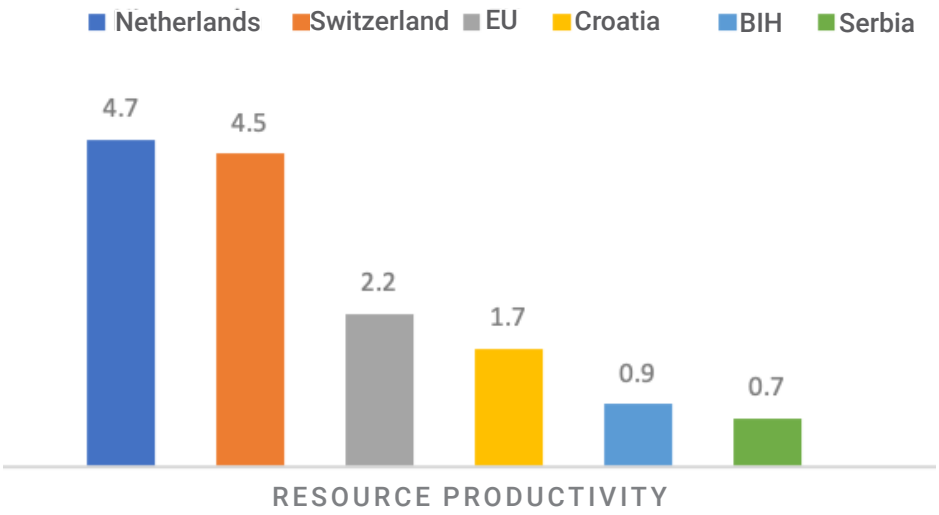
BiH, as most of the Western Balkan countries, is facing problems such as high pollution of water, air and soil, high use of fossil fuels, low production efficiency, low level of connectedness with research and introduction of innovations in production processes, under-developed system of circulation of materials and reuse/refurbishment/production of new products. The first priority of the Green Agenda for Western Balkans is that the "value of materials is preserved to a feasible extent, while at the same time minimizing generation of waste."

In 2019, BiH consumed 40 million tons of natural resources (11.5 tons per capita), which was by 28.5% more than in 2010. In the same year, average value of consumption of natural resources per capita in **EU was 14.5 tons per capita**. National consumption of natural resources per capita was lower in North Macedonia and Albania, but also in seven countries of EU: Malta, France, Croatia, Greece, Spain, The Netherlands and Italy.

In 2019, BiH consumed **40M tons** of natural resources, which was by 28.5% more than in 2010

Resource productivity (ratio between gross domestic product and national consumption of resources in BiH (0.9) is significantly bellow EU average (2.2). For comparison, in 2019, Bulgaria and Romania had 0.8 each, and Serbia had 0.7. Compared to other EU countries, the Netherlands and Switzerland have significantly higher resource productivity (4.7 and 4.5, respectively).

Resource productivity - ratio between gross domestic product and national consumption, comparison of different countries from the Region and EU



Out of 1,228 thousand tons of municipal waste (352 kg per capita) generated in BiH in 2019, 1.077 thousand tons (or 84%) were permanently landfilled. Out of this, only 27 thousand tons, or **2.2% of generated waste were processed**. For comparison, EU generated 502 kg of municipal waste per capita, out of which 48% was recycled. These data point at the lack of capacities for sorting and recycling of waste. Only a limited number of waste landfills possess sorting facilities (in Sarajevo, Mostar, Banja Luka, Konjic and Tuzla), and even those that exist operate at a minimum capacity. The sorting facility in Doboj has (temporarily) stopped working due to high costs.

In 2020, 812,323 tons of non-hazardous waste was exported from BiH, while 29,029 were imported. Other countries that have better infrastructure, better understanding of situation in this

field, but also higher average cost of primary materials than the one in BiH, create value from waste generated in BiH. In terms of quantities, the most significant exported non-hazardous waste included metal (241,120 tons), paper and cardboard (44,350 tons). BiH imports mostly metal (9,436 tons) and plastic waste (7,114 tons). It is only in case of plastic waste that import exceeds export (by 1,107 tons), suggesting that domestic capacities for recycling plastics do exist.

Official statistics in BiH covers the categories of data regarding circular economy only to a limited extent. EUROSTAT follows trends in circular economy in EU countries using three groups of indicators: sustainable resource management and trends in recycling market (10 indicators), behaviour of citizens (6 indicators), and business operations (8 indicators). Comparative data exist in BiH with respect to indicators that measure consumption of natural resources per capita and for resource productivity.

A significant progress needs to be made in terms of gathering and processing of data related to circular economy in BiH in order to obtain full understanding of the situation in this area, as this is a necessary prerequisite for making strategic decision in the field.

STRATEGIC AND LEGISLATIVE FRAMEWORK FOR CE IN BIH

Although **there is no systemic approach to circular economy** in BiH, in recent times, and especially following the adoption of the EU Green Deal and the Green Agenda for the Western Balkans, there has been an evident increase in initiatives and support to CE in BiH, including the creation of strategic and regulatory framework.

Currently, BiH is working on a **number of strategic documents** that concern sustainable development, and involve, in a lesser or greater degree, elements of CE; those are: Integrated energy and climate plan for 2021-2030 and Environmental Strategy and Action Plan until 2030+ that will define environmental goals and policies in BiH by 2032, and is planned to be adopted in the second half of 2022.

Work on drafting the **Road Map for Circular Economy in BiH** is currently ongoing; it involves representatives of state and entity level institutions, representatives of employers, universities and civil society. It is considered to be the first step towards strategic planning of CE in BiH. The road map will cover the period 2021-2027, based on strategic directions and successful practices in the EU and the Western Balkans region. The project is implemented and financed by UNDP.

In order to **align the BiH legislation with the EU legal framework and concept of CE**, the most relevant legal acts that BiH should adopt or amend are those **regulating efficient use of resources, reuse, separation of component and special treatment of waste for re-use, and similar.** BiH needs to coordinate and align approaches at the national and entity levels with respect to environment protection and waste management by adopting the CE concept as a basis for sustainable development.

CE and legal framework for waste management in BiH

Some sections of the existing laws and secondary legislation address certain elements of circular economy, especially in the area of waste management. For example, **the RS Law on Waste Management** has introduced new terms, such as re-use of product, green yards, extended responsibility, recycling yard, and waste management centre. The Law defines duties and obligations that are aligned with CE, such as the development of a system of separated collection of waste, definition of methods for collecting all kinds of waste, identification of locations for recycling yards, disposal sites, covering costs of cleaning the unsanitary ("wild") dump sites, organizing educational and public campaigns for the purpose of raising awareness on waste management. Producers are obliged to introduce and use, as much as possible, returnable packaging, and they are also responsible for products and packaging that contain hazardous materials and substances in quantities and/or concentrations that may adversely impact human health and environment.

In FBiH, there are over 20 legislative acts that address eight components of waste in terms of recycling (glass, metal, plastic, wood, multi-layered composite materials, packaging and el. waste). In the Law on Waste Management of FBiH, provisions of relevance for CE include extended producer responsibility. Producer is responsible for selecting the most environmentally-friendly solution depending on characteristics of the product and production technology, including the life-cycle of the product and use of the most appropriate available technology. The "polluter pays principle" means that the producer or owner of the waste should pay all costs of prevention, treatment and disposal of waste, including the care after use and monitoring, and is held financially liable for prevention and rehabilitation measures regarding the environmental damage they have causes or will have likely cause. For the purpose of preventing waste generation and reducing volume and adverse impact of waste, achieving rational use of materials and energy, keeping the materials and leftovers in the process of production and utilizing them as much as possible, making products that generate the least negative impacts, and replacing materials that cause risk when becoming waste, are all encouraged.

Taking into consideration the breadth of the concept, **there is a range of regulatory areas that may impact positive developments in this sector** (like in the area of energy efficiency and sustainable sources of energy, environment, waste management, forests and waters, taxes, customs, incentives, business environment, and others). Incorporation of the basic principles and models of circular economy in legislation of BiH will be **demanding and will require extensive effort.**

Organizations and initiatives regarding circular economy in BiH

Public institutions in BiH have not been the main drivers of initiatives in this area. Hopefully, strategic documents and legislative framework will be developed and adopted soon, and accompanied with new programs of incentives for companies and local communities that would lead towards greater opportunity to use EU funds. Business community and civil society organizations can, among other things, contribute to implementation of EU funds.

The most important developmental partner in this area most certainly is the EU as it allocates significant funds to support CE initiatives in BiH, ranging from those of strategic importance to company support programmes, by supporting implementation of the Green Agenda for Western Balkans. The funds available for these initiatives will increase over time, and will be implemented through the Instrument for Pre-Accession Assistance (IPA), several community programs such as ERASMUS+, Europe for Citizens, HORIZON Europe, LIFE, and programs of European development banks within the Western Balkans Investment Framework.

There are more and more local non-governmental organizations and consulting companies that are involved in circular economy in BiH; they work on implementation of several CE projects financed by international organizations by providing technical assistance in the development strategic documents, supporting companies in their transition towards the CE models, supporting local communities, developing capacities, and promoting the CE concept among general public.[51] Such initiatives are supported by international developmental partners, such as the EU Delegation to BiH, UNDP BiH, Swedish and Norwegian development agencies, and other agencies and foundations (USAID, Heinrich Böll Stiftung, etc.) Universities should play a greater role in future in education, awareness-raising, research, development and innovation, and in efforts to encourage companies to incorporate the CE models in their operations.

Considering that BiH is in a very early stage of transition towards CE, significant efforts are required to **develop capacities of all parties interested in CE, and to establish networks, promote good practices and international exchange, as well as to raise awareness among both the business community and the consumers.**

[51] EU4Agri Recovery, EU4Business Recovery, CIRCLE (Circular Innovation and Resilient City Labs in the Adrion Region), Zero waste municipalities, Podrška inovacijama malih i srednjih preduzeća u prilagođavanju EU standardima, Decarbonisation Challenge for Small and Medium Enterprises, Circular Economy Balkan Beacons i drugi...

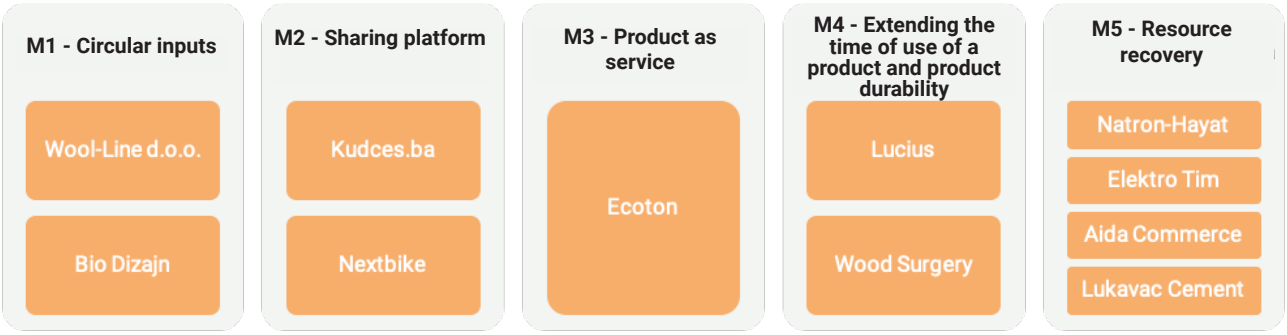
Companies

Numerous BiH companies include in their operations, to a larger or smaller degree, some elements of circularity, and this suggests that some of the prerequisites for progress in this area exist. In the Case Study of CE business practices in BiH, which was made under this project, describes 72 examples of companies that implement circular activities.

The project team selected some of the cases to analyse more thoroughly, and published interviews with representatives of 11 companies (all five models of the creation of circular value were included). The selection was made on the basis of following criteria:

1. Potential for implementation and replication
2. Opportunity to include informal sector
3. Significant impact in terms of reducing the amount of waste and environment pollution

Overview of companies interviewed regarding CE models from the Case Study of business practice in BiH



Key findings of this part of the survey are:

Most companies possess basic knowledge on circular economy. It is noticeable that there is a certain lack of understanding of different techniques used for treating waste, so the activities of collection and transport of secondary materials are often misidentified as recycling, and thus as a part of CE. In most cases, circular economy is linked to sustainable development, waste reduction, product recycling, creating the closed-loop system, minimizing use of resources as inputs, re-use, competitiveness, positive influence on the society, product design, waste management, repair of products, environment protection, etc.

With regards to **companies in Bosnia and Herzegovina, circular economy is often implemented as a separate activity,** i.e. very few companies operate predominantly on the basis of CE principles. There are multiple reasons for this, and the study pointed at some of them, including lack of financing, misunderstanding of CE as waste management, insufficient internal CE capacities, complex and incompatible administrative procedures, lack of institutional support (e.g. by improving legislation related to CE and similar), problems related to supply of input materials, complex import procedure and the absence of support system to CE (e.g. financial mechanisms to support CE).

None of the analysed companies implement 100% circular model of operation; this is quite understandable given the barriers described above, and also the fact that CE is in its very early stage of development in this region. Two out of three identified companies use M5 (resource recovery) business model, while the other models are significantly less represented. It is important also to note that the project team had difficulties identifying companies that implement CE activities due to lack of information, i.e. companies tend to publish very little information regarding their CE activities. This, among other things, confirms the belief that most companies in BiH implement CE sporadically or as a side activity.

Drivers of CE activities in companies may vary. Some of the companies have recognized CE as a primary business model (e.g. Lucius, Kudces.ba, project Bio-design), other companies use CE to complement their core business (e.g. Aida Commerce, NextBike), while some companies, due to their close links with international markets and owners, generally implement more advanced models, including with respect to CE (e.g. Natron-Hayat, Lukavac Cement). In most cases, CE activities were initiated by the top management or the owner.

Provision of services instead of products is one of the key recommendations for CE, and services sector has a role in moving away from linear production systems. Relevant literature often proposes that companies with roots in linear production system must look for new business models focusing on services in order to complete the resource circle. This survey also suggests that there is a potential for small (even micro) service-oriented companies to offer services that may contribute to circularity, both in companies that receive technical support, and in companies that rely on product manufacturing.

Small companies like Kudces.ba, Bio-design, Wood Surgery, Wool-Line, **must ensure their financial sustainability by combining revenues** from circular activities with revenues from their other operations. For example, companies like Natron-Hayat earn revenues by selling paper products, Aida Commerce earns by recycling and trading with secondary materials, while micro companies have difficulties sustaining their business.

The most important **tools the companies use in implementation of circular economy** include analysis of resource efficiency, planning sustainability, designing modular products, life cycle assessment (LCA) and eco-design. Companies included in our study pointed at a number of external factors that might improve implementation of CE, e.g. the provision of technical assistance for analysis of resource efficiency, the innovation of processes or services, and training and development.

BARRIERS TO DEVELOPMENT OF CIRCULAR ECONOMY IN BIH

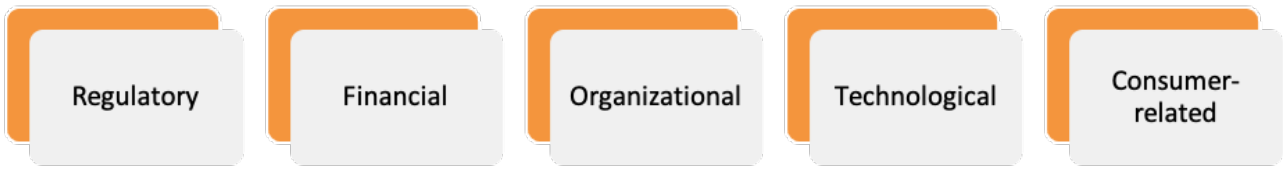
Transition towards CE is inhibited by the current "linear" legislation, markets, investment tools and practices. These barriers prevent the businesses to reflect the real price of negative environmental impacts (so-called negative externalities) in the price of their goods and services.[52]

On the basis of **comprehensive overview of literature** by authors Jesus and Mendonça,[53] technical barriers were the most frequently mentioned CE barriers in literature (35%), followed by institutional/regulatory (23%), economic / financial / market barriers (22%) and social / cultural factors (20%). As for incentives, most frequently mentioned are institutional / regulatory (36%) and economic / financial / market (35%), while social / cultural (22%) and technical (8%) were mentioned less frequently.

Barriers to transition to CE can be classified as internal (those related to internal processes / decisions made in company) and **external** (those related to external conditions that are not so much under direct control of companies). For example, internal conditions may include decisions on business models, priorities or operational culture. External conditions include policies, prices or incentives offered by the government, and requirements, practices or activities of other stakeholders, such as buyers or organizations in the supply chain. However, since every internal decision is made within a context of external influences, they are mutually related. Barriers should be viewed as interdependent because of synergies that exist between various barriers.[54]

Barriers may be categorized in a variety of ways; for the **purposes of this survey, they are classified as regulatory, financial, organizational, technological, and consumer-related barriers.**

Barriers to circular economy, categorization of barriers



REGULATORY BARRIERS

Bosnia and Herzegovina does not have a **general legislative act on environment protection** that would provide basis for development of other legislation (e.g. waste management). Competences related to environmental policies (in the broader sense) are defined in the Law on Ministries and other Administrative Bodies of BiH, while the entities, Brčko District and cantons are responsible for designing and implementing the policies. This equally applies to legal and to strategic aspects. In practice, this frequently causes inertia in the decision-making process resulting with slow, and often-insufficient implementation of existing legal and strategic acts in this area.[55]

Although the CE is rarely or never recognized in laws and strategic documents, **certain principles** that can be put in relation with CE **are integrated**. So for example Waste Management Plan of RS recognizes achievement of rational use and preservation of natural resources, reduction of overall quantity of waste being landfilled, reduced emissions and mitigation of threats to health of people and environment.[56] Specifically, for certain categories of waste, it was determined in late 2021 that implementation of new provisions on waste management in FBiH, as well as criteria for calculation and payment of fees, will begin on 1 January 2022.[57]

[52]European Commission, Incentives to boost the circular economy, 2021
[53]A. de Jesus i S. Mendonça, Lost in Transition? Drivers and Barriers in the Eco-innovation Road to the Circular Economy, Ecological Economics, Elsevier, Vol. 145, str. 75–89, 2018.
[54]P. Ekins, T. Domenech, P. Drummond, R. Bleischwitz, N. Hughes, L. Lotti, The Circular Economy: What, Why, How and Where, UCL Institute for Sustainable Resources, University College London, 2019.
[55]Research paper "Analysis of influences of people's awareness and implementation of strategic documents on implementation of energy transition in Bosnia and Herzegovina" within the project Pokreni se, REIC Sarajevo, 2021
[56]Environmental Action Plan BiH (ESAP 2030)
[57]Special categories include tyres, batteries and car batteries, oils and cars. The Law on Waste Management of RS (2020), stipulate the fee for special categories of waste, including plastic shopping bags, batteries and car batteries, tyres, electrical and electronic products and equipment, and oils, and motor vehicles. Rulebook on special categories of waste is under preparation, and so is the Rulebook on fees for disposal, as well as the system of collection of fees an operational disposal of special categories of waste.

Still, the majority of current strategic documents do not address the CE-related issues. One rare exception is Climate Change Adaptation and Low-Emission Development Strategy of BiH 2020-2030 (currently a draft) that explicitly addresses measures related to circular economy. Environment protection strategy at the level of BiH, entities and Brčko District is currently being developed, as a framework strategy that includes several areas. The future sectorial strategies (first of all, the waste management strategy) are expected to place more focus on CE.

For illustration, **CE principles have not yet been introduced into the waste management strategic framework.** Linear model of economy dominates over the CE model at both entity and local levels. Introduction of the extended producer responsibility system for packaging and packaging waste in FBiH and RS, and for electric and electronic waste in FBiH, is an important step in BiH's transition to CE.

Main **barriers that are related to implementation of strategies** in the field of environment, at all levels of government, are the **lack of material and financial assets, human capacities and other necessary resources.**[58]

In many countries, **lack of financial incentives has been recognized** as the main barrier to CE: Currently, financial instruments supporting CE in BiH boil down to rare and individual cases (for example, the Environmental Protection Fund of FBiH, included in their public calls CE-related projects). On the other hand, significant subsidies are provided to coal-based technologies. According to a Study made by the Energy Community Secretariat,[59] the state-owned power companies in BiH alone receive 41.55 mil. euro in direct subsidies, and 250.28 mil. euro in indirect subsidies every year (average for the period 2015-2017).

As in other sectors of environment, BiH needs to ensure a coordinated and harmonized countrywide approach to resolving waste management issues, and this is of particular importance in the context of CE. This needs to be reflected both in legislative framework and in the strategic approach. BiH needs to align its legislation with the **Directive on landfills and close or rehabilitate landfills** that do not meet the specified criteria.[60]

An important basis for developing policies related to CE is the availability of **data of CE relevance**, which should be collected at local level, and subsequently shared with higher levels (entities, state). One important step in this direction is the establishment of the waste management system in both entities. The Environmental Protection Fund of FBiH started this system in February 2021, while the establishment of this system in RS is currently in progress (January 2022). Since the system is still in the phase of introduction, it is not possible to assess the quality of communication and the use of these data at other (e.g. line ministries) and higher levels (state level institutions) of government. It is certain that this system contributes to enhanced transparency of the whole supply chain and provides a sound basis for the decision-makers when designing CE-related policies. In particular, this can have strong impact on the promotion of different business models (e.g. resource recovery, circular inputs).

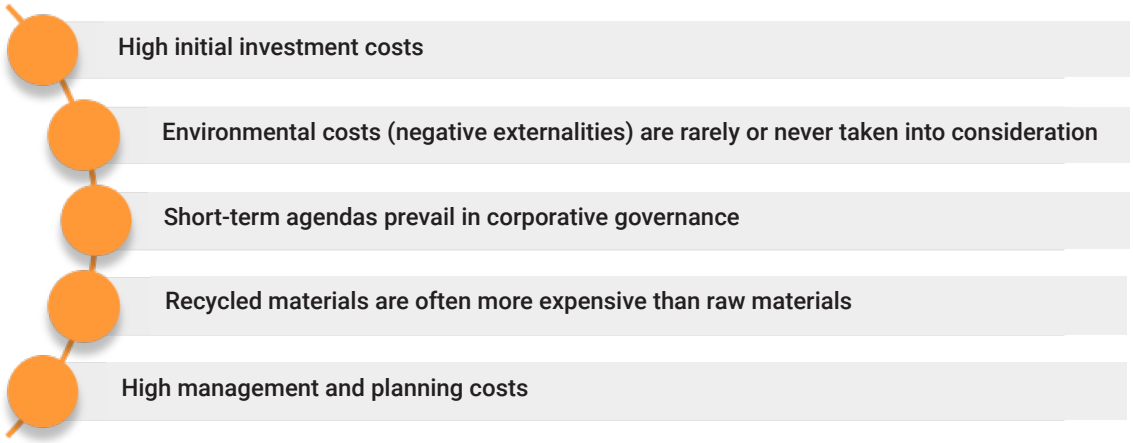
[58]Directorate for European Integrations (DEI), Responses to the European Commission Questionnaire, Chapter 27, Environment
[59]Energy Community, https://energy-community.org/news/Energy-Community-News/2019/06/20.html
[60]European Commission, 2021 Bosnia and Herzegovina Report.

FINANCIAL BARRIERS

Financial cost-effectiveness and sustainability are important preconditions for introduction of CE model, and in this context, barriers are often caused by external factors, such as market conditions, tax policy, system of incentives, and access to finances.

Research conducted under a CEB[61] project identified **key financial barriers** to the implementation of CE in BiH, as follows: (i) high initial investment costs; (ii) environmental costs (negative externalities) are rarely or never taken into consideration; (iii) short-term agendas prevail in corporative governance; (iv) recycled materials are often more expensive than raw materials; and (v) high management and planning costs.

Key financial barriers to CE in BiH according to CEB research



Frequently, **high initial investments in new technologies or reorganization** of operations make the CE appear insufficiently cost effective in the short run. If the introduced CE measures directly result with reduced costs, they become incentives; however, if they lead to increased costs of operations, then they become a barrier in the view of a profit-oriented company.[62]

Introduction of operations that comply with the CE principles often requires a change of technology and organization of operations, and these may entail significant costs. Large part of BiH economy does not rely on implementation of the latest technological solutions, primarily because of high investment costs. Numerous are factors that cause low purchase power of BiH companies, while crises, such as corona virus pandemic, only add to the problem. Total investment in fixed assets in BiH went down by 2.3% compared to the 2019 level. This decrease does not appear significant because investments in sectors of health and social protection, as well as transport and storage, have increased by 83.1% and 44.2%, respectively. On the other hand, processing industry, as one of industries that has the greatest potential for the implementation of CE, is seeing a decrease in loan investments by 43.4%.[63]

Financing business operations, including those related to CE, by borrowing is harder in BiH than in EU countries. Based on European Central Bank data, 2021 interest rate for companies was 2.05%,[64] while at the same time, this interest rate in BiH was 3.44%.[65] In addition to paying higher interest rates compared to the other countries in neighbourhood, BiH companies also have to face the rigidities of banking and financial systems, with alternative sources of financing either unavailable, or very limited. Use of stock exchanges as source of financing for business ventures is available only to a negligible number of companies. Lending and financial institutions do not recognize investments into CE as a special category to be financed.

[61] Circular Economy Beacon, Cirekon&REIC, 2021.
[62] P. Ekins, T. Domenech, P. Drummond, R. Bleischwitz, N. Hughes, L. Lotti, The Circular Economy: What, Why, How and Where, UCL Institute for Sustainable Resources, University College London, 2019.
[63] Agency for Statistics of BiH, adapted from Economic statistics: Investments in 2020
[64] European Central Bank, Statistics of bank interest rates in Eurozone: November 2021, available at: https://www.ecb.europa.eu/press/pr/stats/mfi/html/ecb.mir2111~bded81a19f.en.html
[65] Trading Economic, Interest rate in Bosnia and Herzegovina, available at: https://tradingeconomics.com/bosnia-and-herzegovina/interest-rate

Since **banks in the wider region are increasingly taking the ESG criteria into consideration when making investment decisions, and a part of the funds allocated to EU economic investment plan for Western Balkans is going to be used to improve access to finances of companies proposing CE projects, some more affordable financing opportunities are to be expected.** For instance, earmarked loans for projects for improving energy efficiency are mostly supported by international funds, such as the German Development Bank (KfW), and such loans often include additional benefits in the form of grants or the provision of technical assistance.[67]

In FBiH and RS, there is a **limited number of financial mechanisms that support transition to CE**. Among such mechanisms are the fees payable for non-compliance with recycling and re-use targets for specific categories of waste. One of the problems faced on the path towards establishing a CE system is also the underdeveloped recycling industry that is constrained by the lack of incentives and by a relatively small market for primary materials.[68]

Global market prices of input materials often fluctuate, particularly at the time of ever more frequent global disturbances that affect supply chains (financial crises, pandemic, stoppage of transport through the Suez Canal). The BiH market is particularly vulnerable due to its small size and dependence on international trade. The average industrial producer prices index in BiH was 108.5 over the first 11 months of 2001, and as many as 23 of 28 industrial categories have the index above 100, double the level in 2015. The greatest growth over the period 2015-2021 was seen in the following groups: extraction of metallic ores, coke and oil derivatives production, wood processing, generation and supply of electrical energy and gas.[69] Such drastic changes in prices particularly affect import-intensive economies like BiH's, but they do have positive effect in the context of price competitiveness of secondary and domestic materials.

TECHNOLOGICAL BARRIERS

Technological barriers are related to life cycle of materials and products (research and development, design, production, recovery). Technologies may be developed internally in the company, or externally, through publically financed research and development programs. In order to apply new technologies, BiH companies also need transfer of know-how; lack of entrepreneurial tradition in BiH combined with its complex transition process and its relatively low level of foreign direct investments are additional obstacles in this context.[70]

Typically, the process of developing new products and implementing new technologies, e.g. when developing mobile telephones, rarely takes into consideration the need for parallel development of technological and organizational capacities for eco-design and product development in accordance with CE principles, including longevity/durability of products, product modularity, standardization and compatibility, possibility to disassemble, recycle and reuse products, reduction of quantities of materials and use of sustainable technologies. The existing technologies that are old and poorly adapted can make the implementation of CE principles difficult. In this context, product complexity can prevent the separation of materials, which makes the recycling difficult.

[67] https://raiffeisenbank.ba/dokumenti/brosura-kfw-krediti-za-mala-preduzeca-i-obrtnike
[68] ESAP, 2020.
[69] Agency for Statistics of BiH, Industrial producers price index in BiH in 2020, December 2021
[70] Soko, A., The role of behavioural economics in BiH does remittances and foreign aid have adverse effect on economic development?, IBU, Sarajevo, 2016.

ORGANIZATIONAL BARRIERS

Organizational barriers include **internal company barriers**, although the interest of companies to overcome these barriers is primarily motivated by the change in external conditions that contribute to CE development.[71]

A survey conducted under the project "Circular Economy Beacons" showed that around 70% of interviewed representatives of small-l and medium-size companies (SMEs) believed they had no capacities to implement change and benefit from the opportunities offered by CE. Over 40% of interviewees stated that reasons for this included long return period, lack of time, and unclear market benefits.

Often, **the lack of long-term planning in small and micro-companies results** in losing sight of a long-term vision as such companies tend to focus on current market situation, and use their available capacities and resources to respond to current demands of clients. Long-term planning requires monitoring long-term trends and recognizing the need to change and adapt towards more circular strategies and business models that take into consideration aspects of circularity.

SMEs in BiH need encouragement to adopt the measures of resource efficiency; however, achieving that result would require activities of **raising awareness among SMEs on how the resource efficiency offers return on small investments.** This would be the first turning point for Bosnia and Herzegovina on its path to green economy.[72]

CONSUMER-RELATED BARRIERS

Consumer-related barriers are about perceptions and customs of end-users that undermine or inhibit implementation of circular business models. Examples of such barriers can be found in **deeply rooted cultural and societal norms, low level of awareness among general public** of the importance of sorting the waste, and the fact that, in most cases, buyers want new products. Promotion of pro-environmental behaviour in daily life is critical for CE. Willingness to buy "green products," **apart from awareness, also depends on availability of funding, time and opportunity**.[73]

Transition of BiH economy to CE principles is also met with barriers in the form of deeply rooted societal norms as c**onsumers avoid sharing products and services**, and prefer to have their own. This is the primary barrier for all models of "sharing platforms" and "product as service". Illustrative example of this attitude is cars, as their number increased by 14% over the period 2011-2019.[74] This trend adversely impacts efforts to expand car-sharing services, which might bring significant economic advantages since cars in EU is parked 92% of time on average.[75]

Another barrier to transition to CE is that, in keeping with principles and habits of consumer societies, **BiH population prefers to buy new**, and they avoid second-hand, repaired and refurbished products. On top of that, buyers in BiH are partly ethno-centric, which may add to market fragmentation.[76]

Separate collection of different kinds of waste is a key prerequisite for mass recycling and people's participation in transition to CE. According to entity institutes for statistics, more than 90% of municipal waste generated in 2020 was landfilled, while the existing system of fees for waste management (charging an certain amount per square meter) significantly de-stimulates waste separation at the place of origin.

[71] P. Ekins, T. Domenech, P. Drummond, R. Bleischwitz, N. Hughes, L. Lotti, The Circular Economy: What, Why, How and Where, UCL Institute for Sustainable Resources, University College London, 2019.
[72] Organization for Economic Cooperation and Development (OECD), SME Policy Index: Western Balkans and Turkey, Bosnia and Herzegovina: Small Business Act profile, 2019
[73] Ratner et al., Barriers of Consumer Behavior for the Development of the Circular Economy: Empirical Evidence from Russia. Appl. Sci., 2021.
[74] BIHAMK
[75] Growth within: A circular economy vision for a competitive Europe, Ellen MacArthur Foundation, 2015.
[76] Brkić et al., Ethnocentrism and Animosity in Consumer Behavior in Bosnia and Herzegovina and Implication for Companies, Economic Review: Journal of Economics and Business, 2011.

CATALOGUE OF POSSIBLE INCENTIVES

The CE incentives may be of financial or non-financial nature, and they should support creation of new value, focus on mitigation of investment risk, and enhance competitiveness of CE supply chains. Decision-makers should design and implement incentives commensurate to the desired impact, size, scope and time of implementation. Generally speaking, the greater the incentive, the control mechanism should be more rigorous. In order to be effective, such incentives should:[77]

- aim to achieve concrete benefits
- be proportional to the desired income
- prevent detrimental interests and reduce unwanted compromises
- reflect local context and market maturity level
- mitigate, to the extent possible, the effects of free-riders
- evolve over time.

Having in mind that there is no link between barriers and incentives, **five groups of incentives have been identified in this document that may help decision-makers** in the context of transition to CE in BiH:

1. Improved legislation regulating circular economy
2. Fiscal incentives for circular economy
3. Introduction of full price to cover waste management costs
4. Green public procurement
5. Education and awareness-raising programs

Groups of incentives for circular economy in BiH[78]

IMPROVED LEGISLATION REGULATING CIRCULAR ECONOMY

Transition to circular economy requires a stimulating political and regulatory framework that works well. Such a framework should be designed in such a way **to enable the preservation and upgrading of the core value of materials along production systems and value chains, and minimize use of** primary materials as inputs. Current policies and regulatory framework in BiH do not suffice to make the business models of circular economy and value chains successful.

[77] European Commission, Incentives to boost the circular economy, 2021
[78] Attached to this document is the extended list of possible incentives.

According to the European Commission's Expert Group on Circular Economy Financing, the following **principles must be taken into consideration when formulating** policies and interventions:

1. Preservation and the creation of value
2. Proportionality (at the level of externalities)
3. Progressive de-materialization
4. Innovation sensitivity
5. Additionally - the necessity of making sure that new policy interventions are integrated and supportive of effective and timely implementation of related existing policies or to strengthen their impact.

According to the Environmental Approximation Strategy of BiH,[79] **waste management** is one of priorities. Legal instruments concerning waste may be grouped hierarchically, while the Framework Directive on Waste (2008/98/EC) defines the waste management framework.

The most relevant future pieces of legislation related to CE are listed in the 2020 **EU Action Plan for CE**,[80] and they can serve as the basis for developing BiH legislative framework. Some of possible incentives may include:

1. Reduce government subsidies (abolish restrictions that apply to circular products and services, and reduce/terminate subsidies for mining, fossil fuels, etc.),
2. Increase minimal legal warranty period - regulate the product life expectancy and duration of warranty,
3. Restrict use of disposable products when a circular alternative is available,
4. Define compensations for purchase of primary (raw) materials,
5. Determine qualitative quota for recycling to prevent diminishing quality,
6. Set limits for/restricting import of certain materials,
7. Develop clear rulebook on CE activities and business models,
8. Define targets for re-use, preparation for re-use and refurbishment of products.

FISCAL INCENTIVES

This type of incentives includes different financial incentives, such as t**axation, subsidized financing and internalization of the costs of externalities.** European Commission report[81] on acceleration of transition to circular economy identifies groups of incentives based on their purpose, which are expected to:

1. Provide level playing field, so that CE actors have better chances to compete and succeed in the market,
2. Support cooperation in value chain to enable and reward cooperation for the purpose of optimization of circular economy solutions,
3. Enable creation of value by supporting models of increased product longevity,
4. Stimulate end-users' participation in value chain in order to ensure product and material circularity.
5. Integrate incentives in public interest to take into account costs of negative externalities and benefits of positive externalities,
6. Increase knowledge and understanding of opportunities related to financing CE business models,
7. Support first movers in creating market demand and including consumers in CE business models.

[79] Ministry of Foreign Trade and Economic Relations, Environmental Approximation Strategy of BiH, (EAS BIH), 2017
[80] European Commission, A new Circular Economy Action Plan For a cleaner and more competitive Europe, Brussels, 2020
[81] European Commission, (2019), Accelerating the transition to the circular economy

For example, **Environment Protection Funds in FBiH and RS** earn most of their revenues from various types of fees, and have an important role in environment sector. On annual basis, the Funds implement a significant number of projects; in the most recent public call issued by the Environment Protection Fund of FBiH, 8.8 mil. BAM were awarded to 183 projects. Out of the approved projects, three projects have circular economy in their name.[82] This should be seen as pioneering work and, most certainly, the Funds can take an active role in encouraging CE by the existing, as wel as some new sources of financing.

Some of **financial incentives** for CE project in the broader region include:

1. Encouraging companies to make changes towards circular behaviours and activities by providing direct or indirect financial assistance,
2. Ensuring partly concessionary co-financing or loans for projects aiming to introduce circular economy model in operations,
3. Providing guarantee fund and partly replenishing the investments in fixed assets or starting capital for companies applying circular operations,
4. Encouraging banks to introduce targeted loans to support circular operation by state/entity subsidizing interest rate,
5. Offering longer grace period in targeted loans for circular operations,
6. Setting lower VAT or providing local subsidies for circular products,
7. Protecting interest rate against risk of other factors,
8. Introducing additional fees, such as excise taxes or taxes for production operations that do not comply with circular economy requirements, or have negative impact on environment,
9. Providing alternative source of loans,
10. Establishing a fund to support circular operations.

INTRODUCTION OF FULL PRICE OF WASTE MANAGEMENT COSTS

System "pay as you throw" is the price model for the collection of waste, i.e. users pay for the waste they generate. Introduction of this system is a strong incentive for separation of waste at the place of origin, and contributes to minimization of waste generation.

In BiH, the **system of extended producer responsibility (EPR)** si implemented, which is a significant additional value for this incentive. So far, it includes commercial entities in both entities (certain manufacturers, imports, distributers) with respect to packaging waste, and in relation with electrical and electronic waste in FBiH.

The **PAYT system would include municipal waste, and thus directly involve physical persons in BiH.** Waste paid under EPR would not be included and charged for under the PAYT. The EPR may provide financing for containers, activities of raising public awareness and sorting for the purpose of increasing the sorting/quality of waste when a municipality had signed an agreement under the PAYT scheme.

Average weighted annual tariff for households is 102 BAM in FBiH, and 128 BAM in RS per household (VAT included), making 0.5% of household expenditures, while international norm is 1-1.5% of the household expenditures, as is the case in most EU countries. Average fee collection rate is 82% in RS an 87% in FBiH and, realistically, this percentage would be very hard to increase because approximately 18% of the population live below national poverty line (859 BAM/month). Moreover, current fee for household includes 17% of VAT, while international practice, especially in the EU, is not to charge VAT on fee for services of the collection and removal of solid waste for households, since the fee for such services is considered to be a tax in itself.[83]

Additional cost element of companies providing services of waste removal in BiH is the responsibility for concluding agreements with households and for collecting the fees. This creates additional financial risk that bills will not be paid.

[82] Environment Protection Fund of FBiH, available at: https://fzofbih.org.ba/wp-content/uploads/2021/12/Odluka-UO-JK-2021.pdf
[83] Analysis of solid waste management sector: Strategic directions and investment planning by 2025, Executive Summary, 2018

International practices show that this fee is often collected by municipalities (paying taxes) in accordance with municipal legislation. Companies providing services of refuse collection collect fees only from commercial/institutional entities on the basis of individual agreements with them. If municipalities were to take over the collection of fees from households, and if the government were to approve exemption of households from VAT on utility services, significant savings could be achieved. This would lead to reducing the subsidies that some municipalities currently pay for municipal waste management.[84]

GREEN PUBLIC PROCUREMENT

Green public procurement is a procedure implemented by contracting authorities when they strive to **procure goods, services and works with reduced environmental impact** during their life cycle rather than goods, services or works having the same core function that would otherwise be procured.[85]

Total value of contracts awarded in the public procurement procedures in Bosnia and Herzegovina in 2019 was 2.8 billion BAM.[86] Law on Public Procurement of BiH does not include precisely defined rules for attaching importance to environmental aspects, but still provides sufficient opportunity to include the "green" criteria in the procedures. Contracting authority has the following options:

- specify green criteria as a condition for pre-qualification of potential bidders,
- define technical specifications by applying green criteria in order to receive environmentally acceptable goods, services or works,
- specify green criteria for contract award by giving preference to bidders who offer environmentally acceptable solutions,
- stipulate special green criteria in contract provisions concerning the method of implementation of the particular contract on procurement of goods, services of works,
- approach specific procurement exercise in an alternative, "green" way in order to achieve the original purpose of procurement, but in an environmentally more acceptable way, etc.

The most important **factor in the implementation of green public procurement is the "green commitment"** of the contracting authority and their sincere intention to adopt a greener approach not only in their procurement process, but also in the general behaviour and attitude towards environment.

Some of the **instruments that may be used in public procurement**:[87]

- As a condition for qualification, one may require one of ISO 14000 standard certificates, or "EMAS" certificate as an evidence of Environmental Management System (EMS),
- Statement of bidders that they accept to implement measures of environmental management during contract implementation,
- Declaration on acceptance to implement measures regarding disposal of waste generated in the process of providing services or carrying out the that are in line with applicable waste management law,
- Requirement that bidder has employed an expert with university degree in ecology, environmental engineering, master degree in ecology, or similar,
- Certificate confirming that the appropriately marked goods comply with specific environmental specifications and norms,
- List of same or similar contracts with environmental aspects previously performed, with the confirmation of their implementation issued by the other contracting party,
- Foresee special obligations aimed to mitigate environmental impact (e.g. taking over the packaging, use of recycled packaging, etc.).

[84] Ibid
[85] Public Procurement for Better Environment. COM. 2008
[86] Agency for Public Procurement of BiH, available at: https://cms-ajn.azureedge.net/documents/f4583bd0-4569-4324-8443-4151aa8a726e.pdf
[87] Recommendations to include green criteria in public procurement in Bosnia and Herzegovina (2021), UNDP

When selecting goods and services most suitable for implementation of green criteria, the European Commission and most member countries took into consideration the following three main factors:

1. Environmental impact: choice of goods/services that have high impact during their life cycle;
2. Budget value: focus on high-consumption areas;
3. Market influence potential: focus on the areas that have the strongest potential market impact.

AWARENESS-RAISING AND EDUCATIONAL PROGRAMMES

Development of strategic and regulatory framework for the purpose of designing a better environment for CE should be accompanied with activities that **motivate consumers to sustainable consumption**, especially if the market is capable of offering sustainable alternatives at affordable cost.

Universities and innovation centres have a critical role in **disseminating knowledge about CE**. Besides needing to teach CE in their curricula, the universities, together with the broader innovation community, may contribute to many other areas of research, knowledge sharing, encouraging eco-friendly solutions and businesses.

The survey done under the CEB project showed, among other things, that r**epresentatives of educational/innovation sector possess knowledge of basic CE principles, and have average level of awareness** regarding the importance of introducing such principles in education system in general. Technical universities have laboratories where students, together with their professors, research the re-use of materials, and generally have capacities to develop innovations towards circular economy. The problem is a lack of inter-sectorial cooperation, lack of cooperation with private sector and decision-makers regarding promotion of such innovative approaches and testing various business models.

Companies, particularly the SMEs, need to be encouraged to adopt measures of resource efficiency. Achieving this would require activities of **raising awareness among SMEs on how the resource efficiency brings return on small investments.** This would be the first turning point in Bosnia and Herzegovina in its transition to green economy.

Awareness-raising activities regarding benefits of CE need to be adapted to different targeted categories. This should be preceded with surveys of the level of knowledge on CE, and of perceptions and views of consumers, companies, universities and schools. Education/awareness-raising programmes may include the following:

- Awareness-raising campaigns, in cooperation with governmental organizations, civil sector, consumers and companies.
- Introduction of CE in university curricula,
- Encouraging entrepreneurial and innovation skills, knowledge and views on CE.

ATTACHMENTS

1. LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
BiH	Bosnia and Herzegovina
CE	Circular economy
EU	European Union
EUROSTAT	Statistical Office of the European Union
FBiH	Federation of Bosnia and Herzegovina
ILO	International Labour Organization
BAM	Bosnian Mark - currency in BiH
SME	Small and Medium-Size Enterprises
OECD	Organization for Economic Cooperation and Development
RES	Renewable energy sources
PAYT	Pay-As-You-Throw system
EPR	Extended Producer Responsibility
RS	Republika Srpska
UN	United Nations
UNDP	United Nations Development Programme
USAID	US Agency for International Development
USD	United States Dollar

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3. LIST OF POSSIBLE GROUPS OF INCENTIVES

1. Reduce government subsidies for activities that do not contribute to CE
2. Increase minimal legal warranty period (regulate the duration of product life and warranty period)
3. Restrict use of disposable products when a circular alternative is available
4. Define compensations for the purchase of primary materials
5. Determine qualitative quota for recycling to prevent the diminishing of quality
6. Set limits/reduce the import of certain materials
7. Develop clear rulebook on CE activities and business models
8. Define targets for re-use, preparation for re-use, and the refurbishment of products
9. Provide direct or indirect financial assistance for CE
10. Provide subsidized financing or loans for projects introducing CE models
11. Establish a guarantee fund for companies focusing on circular operations
12. Provide targeted credit lines to support CE (possibility to subsidize interest rate)
13. Protect interest rate against risks of other factors
14. Introduce additional charges through taxes and excise on production that is not CE compliant
15. Provide alternative source of loans
16. Establish a fund to support circular operations
17. Enhance incentives to cooperation in value chain to facilitate and reward cooperation to CE
18. Provide long-term incentives for creating value and rewarding product longevity model
19. Provide incentives to enhance knowledge on finances in order to improve understanding of CE business models
20. Developing new economic models of green construction
21. Demonstrating to general public the significance and relevance of primary materials
22. Provide training on technical standards required in primary materials industry
23. Encourage entrepreneurial and innovation skills, knowledge and views
24. Incorporate CE in university curricula
25. Implement awareness-raising campaigns on CE (e.g. NGOs and Governmental organizations)
26. Encourage academic research into products and services
27. Implement green public procurement
28. Implement stronger promotion of eco-marks
29. Promote social economy
30. Introduce standardization of products for circular economy
31. Support to research and development activities for integrated projects and investments in new CE activities
32. Adjust fees within the framework PAYT scheme
33. PAYT: adapt contract duration and conditions
34. Introduce prohibition / tax on landfilling / incineration of waste
35. Lower VAT on green products and services

36. Marketable credits for recycling
37. Prohibition of the use of products when there is a CE alternative
38. Introduction of minimal or extension of current product warranty period
39. Taxation of materials
40. Mandatory rate of recycled inputs
41. Incentives for the return of products / materials
42. Mechanisms for reducing labour costs (reducing labour tax)
43. Obligation to provide spare parts
44. Obligation to provide information on products, servicing, repairing, processing
45. Support to innovative business models focused on CE
46. Development of infrastructure for returning used products to producers
47. Inclusion of provisions on resource efficiency and durability in laws on product design
48. Legal framework to facilitate trade in repaired and refurbished goods
49. Making “green deals” at the level of clusters
50. End of Waste procedure
51. Platform for secondary materials
52. Encourage eco-design of products
53. Give priority to renewable energy sources
54. Encourage production of renewable energy while giving preference to the citizens’ energy projects
55. Esatblish a business incubator for CE start-up companies
56. Regional cooperation to prevent waste generation and encourage recycling
57. Develop and encourage regional networking to optimize re-use and recovery of materials at local level
58. Online information platform for circular economy
59. Facilitate donations and repair of products by networking
60. Develop one or several common platforms for collecting donated food

4. LIST OF PERSONS INTERVIEWED IN THIS SURVEY

1. Ministry of Foreign Trade and Economic Relations - Ljiljana Lovrić, Deputy Minister; Mirza Hujić, Assistant Minister in the Sector of Water Resources, Tourism and Environment
2. Ministry of Energy, Mining and Industry in FBiH - Marinko Bošnjak, Assistant Minister
3. Ministry of Development, Entrepreneurship and Crafts in FBiH - Zdravko Ćerović, Assistant Minister
4. Ministry of Economy and Entrepreneurship of RS - Rajko Lajić, Assistant Minister; Milka Latinčić, Head of Department; Stela Pavlović, Head of the Department for SME Development
5. Environmental Protection Fund of FBiH - Indira Sulejmanagić, Head of Department for Environment Protection
6. UNDP BiH – Ismar Ćeramida, Program Manager; Amina Omičević, UNDP Accelarator Labs Growths
7. Embassy of Sweden to BiH - Amila Ibričević, Program Officer
8. Heinrich Böll Stiftung – Jasminka Blejavac, Project Coordinator
9. Centre for Energy, Environment and Resources CENER 21 - Nadira Berbić, Coordinator of the Green Growth project
10. Green Council BiH – Sanela Klarić, Director
11. Foreign Trade Chamber of BiH - Ognjenka Lalović, Director of the Sector for Economy; Aida Vidimlić, Agency for Export Promotion; Adela Vukotić-Terak, the Sector for Economy
12. Regional Centre for Education and Information on Sustainable Development in SEE - Vedad Suljić, Director

CENTRE FOR POLICY AND GOVERNANCE

APRIL 2022

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