



Environmental Ambassadors for Sustainable Development
Environmental Ambassadors, EASD
Belgrade, Serbia
Email: office@ambassadors-env.com

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2020 Spotlight Report on Circular Economy in **Serbia**¹

¹ Prepared for the EU-funded project: ENV.Net Factoring the Environmental Portfolio for WB and Turkey in The EU Policy Agenda, by EASD Team

1. Introductory remarks

At the EU level, 2020 brought into life the *Circular Economy Action Plan* (March 2020); however, without binding EU-wide targets to reduce resource use and related material footprint, it falls short of addressing Europe's over-consumption and matching its own words of respecting planetary boundaries.²

For Serbia, conclusions from 2019 spotlight on circular economy in Serbia, wrapped up in December 2019 in the publication *Circular Economy in Serbia: The Process Started*³, remain in 2020, including that there is no integrated approach in place yet and the environmental policy framework needs to be reinforced in key economic and sectoral policies.

In 2020, in Serbia, the process is continuing with some (small) steps and good example cases, primarily at company level.

2. Some milestones to mention

2. 1. Negotiation position for Chapter 27

Serbia is a candidate country for EU membership;⁴ in January 2020 Serbia presented its Negotiating Position for Chapter 27 (Environment and Climate Change).⁵ and the EU now is preparing a Draft EU common position, towards this chapter that is to be opened for negotiation.

Within the Negotiation position it is also planned how and when Serbia, through a set of Directive Specific Implementation Plans, will implement all EU member countries obligations. For waste management (where circular economy targets related to waste management are presented), Serbia is requesting a transitional period.

Serbia has achieved *some level of preparation* in the area of environment and climate change. Overall, Serbia made *limited progress* in the past year, mainly on strategic planning. The 2019 recommendations remain valid. Serbia should considerably step up ambitions towards a green transition.

² Background paper to the EEB 2020 Annual Conference: The European Green Deal one year in (EEB is Partner organization in ENV.net project)

³ Mihajlov A., A.Mladenović and F.Jovanović (2019), *Circular Economy in Serbia: The Process Started*, Belgrade: Environmental Ambassadors for Sustainable Development, available at <http://ambassadors-env.com/en/www-staro-pre-2020/circular-economy-in-serbia/publikacija-eng/>

⁴ Some facts regarding Chapter 27 (Environment and Climate Change), are following: Explanatory meeting hold 15-19 September 2014; Bilateral meeting hold 17-21 November 2014; Received EC Opinion – Screening Report at the very end of 2016 without benchmarks. Negotiation Position for Chapter 27 has been finalized at the end of 2019, consisting of number of DSIPs (Directive Specific Implementation plans), to support the position, and in January 2020, after the final approval by the Government, it is submitted to EC. Negotiation Position for Chapter 27 was prior to final Governmental approval, discussed and approved by the National Convention of EU, Committees for EU and for Environment of Serbian Parliament. The Serbian Environmental Protection Agency (SEPA) has a responsibility to prepare a national State of the Environment report on a yearly basis, since 2006 (in accordance with Articles 76 and 77 of the Law on Environmental Protection). The Government and the Committee for Environment of the Serbian Parliament approved the latest Report for 2018 in December 2019. Although the legal framework is advanced (EU directives transposed), implementation of laws is a little too slow".

To highlight that it is the chapter without opening benchmarks.

⁵ Negotiation Position for Chapter 27 is under „limite“sign, and it will be like that until Chapter 27 open for negotiation

The circular economy concept in Serbia is still in its early stage. The term “circular economy” is not mentioned in the 2020 EC Report.⁶ The CSOs in Serbia raised this issue in 2018.⁷ Serbia is implementing some initiatives that support circular economy.

In 2020, an Ex-ante analysis of effects related to the (future) circular economy policy is completed,⁸ as well as “A Roadmap for circular economy in Serbia”⁹ published by the Serbian Ministry for Environment with the support of UNDP. The purpose of the Roadmap is to encourage production through application of circular business models, to motivate industry to create new work posts and to advance doing business by detecting innovative, sustainable solutions on the market.

2.2. New industrial policy

According to the 2019 analysis conclusions, for Serbia the relevant strategy is the *National Strategy for Sustainable Use of Natural Resources and Goods (2012-2022)*, with some elements relevant for circular economy; however, this strategy is not accompanied with an approved action plan to ensure its implementation.

Although Serbia has been having *Waste Management Strategies* since 2003, in line with EU *acquis*, now in 2020 the latest strategy is not legally valid. An updated/new public policy document on waste management, as well as a new/updated Law on Waste Management, in line with EU *acquis* related circular economy and waste is expected in 2020 (more realistically in 2021). Considering the recommendations of the European Commission on Circular Economy, *amendments to the Waste Management Act*¹⁰ were adopted in January 2016, enabling support of the circular economy concept and creation of green jobs.

In 2020 Serbia adopted the *New Industrial Policy Strategy 2021-2030*.¹¹ At about the same time the EU introduced a new European Industrial Strategy,¹² and consequently this Serbian one did not take into account the messages formulated in the new EU industrial policy.

EASD analyzed nexus Serbian New Industrial Policy Strategy 2021-2030 – the circular economy concept, i.e. how much of the circular economy concept is substantially considered. The strategic challenges of the new industrial policy have been identified; this public policy document contains comprehensive reform steps in the field of industrial development and permeates a large part of economic activities, with a focus on the manufacturing industry. As a horizontal industrial policy this strategy addresses, among others, the issue of the circular economy.

Important issues intended to be addressed in this document are: the issue of compliance with environmental standards by industrial companies and the circular economy as a source of new industrial

⁶ https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/serbia_report_2020.pdf

⁷ Under the ENV.net3 project umbrella, and also look at <http://eukonvent.org/> <http://eukonvent.org/category/vesti/>
<http://eukonvent.org/category/saopstenja/>

⁸ through project “Policy and Legal Advice Centre – PLAC III, EuropeAid/139295/DH/SER/RS).

⁹ https://www.ekologija.gov.rs/wp-content/uploads/razno/2020/FINAL_202004020_roadmap%20SRBIJA.pdf

¹⁰ Website: https://www.paragraf.rs/propisi_download/zakon_o_upravljanju_otpadom.pdf (Serbian)

¹¹ <https://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2020/35/1/reg>

¹² file:///C:/Users/AnMi/Downloads/EU_industrial_strategy_en.pdf.pdf

growth. The mission is for the industry to grow taking into account resource efficiency and the potential of new products and technologies in the field of environmental protection. Having in mind the presented and elaborated strategic challenges, as well as an overview of the current situation, the Serbian New Industrial Policy Strategy 2021-2030 lists the strategic areas of intervention within which the goals and measures will be defined. In this spotlight report, we are just mentioning the measures that are related to circular economy (strategic area 6), such as:

Measure	
2.5	Support program for industrial economic entities for the procurement of first-generation technological equipment. The measure aims to support the import of modern equipment that is in line with the principles of circular economy , i.e. to respect the principles of efficiency and minimal negative impact on the environment. Type of measure: incentive.
5.1	Promotion of the circular economy and education of economic entities. This measure aims acquainting economic entities with the importance of the more efficient use of material resources and energy efficiency in industrial processes and opportunities for savings in the production process and earnings. This measure will be implemented through the organization of promotional and educational gatherings and the use of services of centers that are active in this sector (Center for Circular Economy of the Serbian Chamber of Commerce; Center for Cleaner Production, Faculty of Technology and Metallurgy, etc.). Type of measure: informative-educational. ¹³
5.2	Encouraging investment in circular and low-carbon economy solutions as growth generators. Adjusting the criteria for encouraging investment in production equipment in a way that favors investment in equipment that meets European energy efficiency standards and is certified in accordance with it. Type of measure: regulatory.
5.3	Encouraging the more efficient use of material resources and energy efficiency in industrial processes. Adjust the criteria for encouraging investment in production equipment by favoring investment to use recycled resources. Type of measure: regulatory.

2.3. EASD continues to provide knowledge-based advocacy towards circular economy

EASD continues to provide knowledge/information advocacy and education activities on circular economy. Before the ENV.net3 project, where one of the topics is chosen to be circular economy, Environmental Ambassadors worked with some companies in Serbia (Tetra Pak, RECAN Foundation, C&A Foundation), which supported Eco-schools Serbia network in their pioneer efforts to promote and to switch daily activities to circular economy. Thus, Eco-schools Serbia network has been raising awareness since 2013 among local communities on how to deal with resources in a sustainable way and to promote re-using of different materials, especially beverage carton, metal and textile. These activities resulted in the strengthening of institutions working with children and adults with special needs, to develop skills and entrepreneurship and to generate income. The first regional conference on circular economy¹⁴ in the frame of ENV.net project was held in October 2018 in Belgrade, with the participation of all ENV.net partners, as well as relevant experts, institutions, national and international organizations which have

¹³ ENV.net and EASD activities belongs largely to this measure

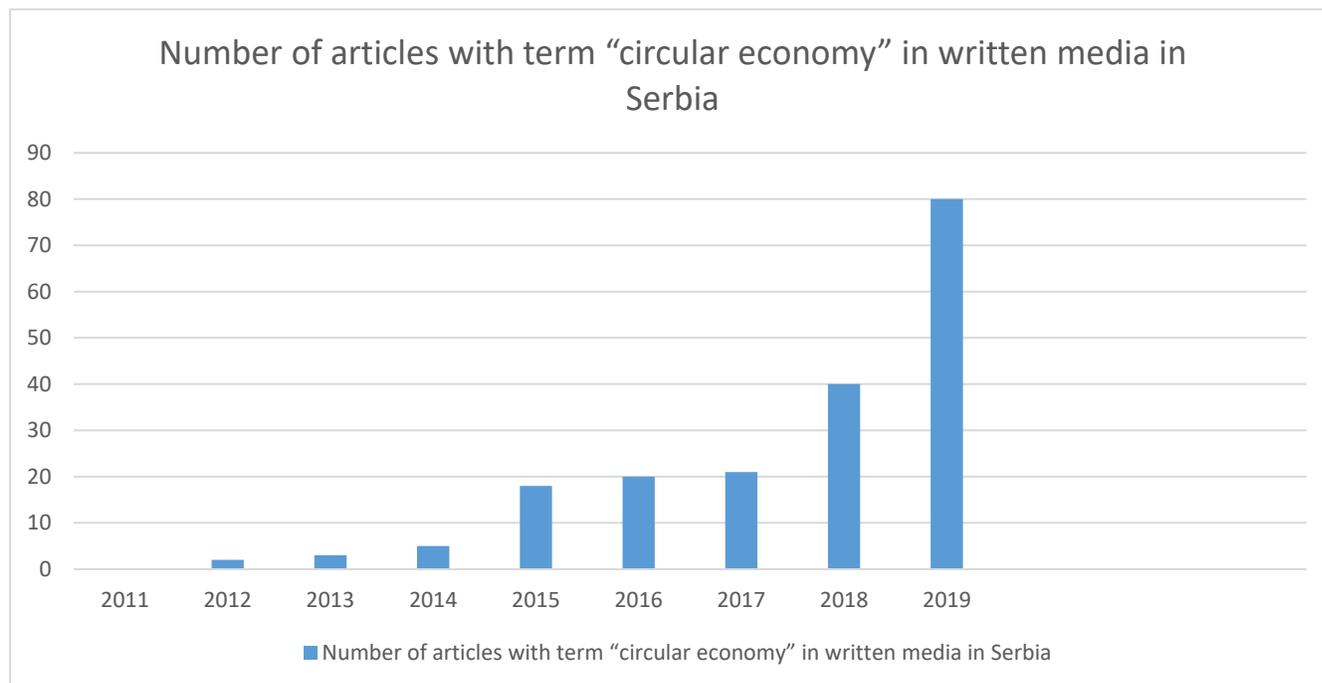
¹⁴ <http://ambassadors-env.com/en/2018/12/07/to-report-the-first-regional-conference-on-circular-economy-was-success/>

already run projects and/or initiatives focused on circular economy. EASD also initiated the revisiting and updating of the National Strategy for Sustainable Use of Natural Resources, possibly in the form of the National Sustainable Use of Natural Resources Plan; this was a joint activity of EASD and the National Convention on the EU. The proposal to innovate and to rethink the National Strategy for Sustainable Use of Natural Resources was addressed to the Ministry of Environmental Protection of the Republic of Serbia.¹⁵

In 2020, ENV.net3 research related to circular economy¹⁶ was presented at EurAsia Waste Management Symposium 2020, Istanbul, Turkey, in October 2020.

The Publication¹⁷ is receiving great attention. It is posted on Researchgate, and as of 31 October 2020 there have been 309 reads of the publication in Serbian, and 124 reads of the publication in English.

EASD continues working on a separate research¹⁸ within the ENV.net3 project (implemented by *Ebart media archive*, Belgrade) on nexus environmental issues-media in Serbia. Below outreach data are presented.¹⁹



¹⁵ <http://ambassadors-env.com/blog/2018/10/13/env-net-inicijativa-inovirati-nacionalnu-strategiju-odrzivog-koriscenja-prirodnih-resursa-i-dobara-u-skladu-sa-principima-cirkularne-ekonomije/>

¹⁶ <http://ambassadors-env.com/en/files/ABSTRACT-Circular-Economy-goes-beyond-Waste-Management-2020.pdf>

¹⁷ Mihajlov A., A.Mladenović and F.Jovanović (2019), Circular Economy in Serbia: The Process Started, Belgrade: Environmental Ambassadors for Sustainable Development, available at <http://ambassadors-env.com/en/www-staro-pre-2020/circular-economy-in-serbia/publikacija-eng/>

¹⁸ This research is the base of the EASD paper Environmental Communication: Media Archive Reports as a Participant Science Tool, accepted to be presented at International Scientific Conference ICCM 2021- International Conference on Communication and Management <https://coming.gr/iccm2021/>, to be held in August 2021 in Athens, Greece (with acknowledgement to ENV.net project).

¹⁹ Data for 2020 will be inserted at later stage, at the beginning of 2021

It is worth noting that ENV.net3 project in Serbia on circular economy is one of priority topics from 2018, and that the EASD team believe that our activities contributed to results presented above.

In this context the EASD team would like to list the related subgrant projects:

1. The Education Development Centre “Planet”, City of Sombor (project: „The Hive- circular economy as a model of entrepreneurship for the youth “).

Activities supported:

- Creation of promotional videos and the entire campaign of the project;
- Promotion and organization of the action of collecting old textiles in primary and secondary schools in Sombor, sorting it;
- "Quality Buzz Generator" Workshops - Going for Responsible Entrepreneurship - Young people with intellectual and physical disabilities, with the support of teachers, create certain usable items using old clothes, materials (two workshops monthly for six months at ŠOSO "Vuk Karadžić");
- Promotion of circular economy workshops - workshops in four primary and six secondary schools in Sombor - initiation of collection of garbage from garments, sorting it out and realization of workshops for the production of items from collected raw materials in each school;
- Organizing a lecture on the topic of circular economy and entrepreneurship in extracurricular activities in elementary and secondary schools with the aim of involving these in their curriculum for the next school year;
- Organization of sales exhibitions in which objects made at workshops will be presented and sold, and for the purpose of collecting funds for the arrangement of an excursion for young workshop participants;
- Communication with different stakeholders (representatives of local self-government, schools, associations, entrepreneurs, individuals, etc.) in order to provide support for the establishment



of a sustainable social enterprise of young people that will use the circular economy principle and enable them to be useful members of society and employees;
-Attending the meeting of eco-school coordinators at Zlatibor and organization of a sales exhibition;
-Furnishing "The Hive" - the space (obtained by the city) to continue the work of the social enterprise of youth with intellectual and physical disabilities.

2. The Association Zlatibor cycle, Municipality of Cajetina, (Project: Model of circular economy in the service of environmental protection in the municipality of Cajetina). Activities supported:

- raising the awareness of citizens of the municipality of Cajetina regarding the importance of responsible behavior to protect the environment through the model of circular economy,
- activities on promotion and engagement of NGOs in a campaign in the local community and advocacy issues regarding the importance of the environment and sustainable development,
- establishment of the Council for Sustainable Development and Education of the Municipality of Čajetina, with the involvement of students in primary and secondary schools from the municipality of Cajetina,
- educational and promotional activities related to environmental protection and workshops for didactic resources of natural materials, raising awareness among parents about responsible behavior, circular economy and environmental protection;
- encouraging the concept of renting and making instead of buying toys- establishing Eco Toys Library (collection of used and production of new toys made of natural materials);
- raising the level of knowledge of the employees in the kindergarten, primary and secondary school teachers in the municipality of Čajetina on the activities

Some data relevant for circular economy in Serbia

Municipal waste generation: 2,46 (2019) mil tons per year; 0,33 (2019) t/cap/year
(Total waste generation for all waste categories about 11,9 mil tons per year, 2019)
Municipal waste recycling rate is 3% (in 2018); 35-40% recycling rate for packaging waste

Municipal waste landfilling: majority of generated municipal waste (about 2 mil tons per year, 2019). Also, no facilities for biological treatment of municipal waste (about 50% of municipal waste is organic waste).

In Serbia there are 3 cement kilns, which can treat (in Serbia, still not significantly; 2 of 3 cement plants substitute fossil fuels with some specific waste (at an average rate at about 20%) to recover energy and to obtain raw materials for the production of cement.

Waste separation is not sufficiently developed, only in some cities/towns there are facilities for waste separation of recyclable waste. For recycling, there are some registered facilities for recycling of metal, plastic, PET, etc.

Materials possible to recycle: 72% of paper and cardboard is recycling, 35% of metal, 25% plastic, 22% glass, 20% wood. Also, there are possibilities for some specific waste recycling.

Availability of incineration plants: no facilities for municipal waste incineration; Belgrade landfill and the construction of a waste to energy facility is expected to start in 2020/21.

Number of (legal/illegal) landfills (and dump sites): 9 regional sanitary landfills and 2 municipals in compliance landfills (plus 2 regional landfills under construction). 137 non-compliant municipal landfills (operated by Public Utility Companies); number of illegal/noncontrolled dump sites (for about 20% of generated municipal waste) – it is noted that there are more 2000 such sites, different sizes.

through which the principles of circular economy and sustainable development are presented to pupils;

- raising the level of awareness of employees in local and regional media about the importance of broadcasting educational and promotional content on the principles of circular economy and sustainable development and presenting examples of good practice.

3.Center of expertise for natural and economic resources (Project: Re-fresh 4EU); supported activities:

- Development of Analysis as Advocacy Tools for Information based advocacy.
- Contributing to improve the creation and implementation of environmental policy in line with the EU.
- Enforcing intensification of action for climate and environment, including circular economy (in the current situation of European integration).

4. Concluded remarks

The circular economy concept in Serbia remains in its early stage.

In the *New Industrial Policy Strategy 2021-2030*²⁰ it is underlined that circular economy and reduction of greenhouse gas emissions include:

- A clear strategic direction of the state is needed for the transformation of the economic model in the direction of circular economy and reduction of greenhouse gas emissions.
- Underdeveloped awareness of industry representatives about the importance of the environment and the fight against climate change in general. Especially in terms of waste management, and the possibilities of using waste as a raw material in industrial processes.
- Through a series of regulatory changes, the EU places special emphasis on the preservation of material resources and the improvement of energy efficiency of industrial capacities, as well as the comprehensive introduction of the concept of circular economy. It is necessary to harmonize domestic regulations with EU regulations in the field of circular economy and climate change.
- Lack of necessary institutional infrastructure (bylaws and administrative capacity) for the implementation of adopted legal solutions, which would encourage the process of economic transformation.
- Industrial production in the country is predominantly based on older technologies, which belong to the larger environmental pollutants and greenhouse gas emitters. Such technologies are accompanied by higher energy consumption and waste production per unit of product (with a significant occurrence of losses in material flows). Insufficient level of waste and wastewater treatment by individual industrial entities has also been identified in the country.
- Insufficient use of the potential of renewable energy sources. Renewable energy production requires additional investment, which makes it more expensive compared to the use of conventional fuels. The use of energy from renewable sources by industrial entities in the country is also insufficient due to insufficient financial strength or insufficient awareness.

²⁰ <https://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2020/35/1/reg>

- Significant lag of the country in terms of waste management, wastewater and the degree of waste recycling. Lack of necessary infrastructure for waste management (waste collection, sorting, storage and processing systems) and wastewater. Insufficient recycling rates for wood and plastic, which have great potential for inclusion in the circular economy system. Occurrence of significant losses of potentially valuable raw materials due to large amounts of waste (including packaging waste) disposed out of legal landfills and waste management sites.

Additionally, EASD concluded with remarks on the main obstacles to switching to the circular economy concept, and the “picture” is “more colourful”:

- The use of natural resources and circular economy concept are not a national priority and strategic goal (currently only indirectly through EU accession as a priority).
- No integrated approach is in place (circular economy is relevant to all sectors of the economy, not only for waste management); limited multi-sectoral approach and connection.
- Appropriate and adequate waste management policy related to circular economy.
- Means of financing by all sources (often financing unsustainable recourse management models).
- Capacities, primarily at local level and businesses (for the new concept).
- Limited awareness raising and education/dissemination of knowledge around circular economy topics and green agenda, including youth.
- Stricter enforcement of the environmental policy framework in key economic and sectoral policies (like proper implementation of SEA, EIA, IPCC/Industrial Directives, investment tools).



TEMA Foundation
Halaskargazi Mh.
Halaskargazi Caddesi No:22, K.7
Şişli İstanbul,
Turkey

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Introduction

Each year, 90 billion tons of primary materials are extracted and used globally, with only 8.6 percent recycled.^{21,22} While this is unsustainable, the nature of the mainstream 'make-take-dispose' consumer model has significant detrimental impacts on human health, climate change, and the environment.²³

A 'circular economy' has been identified as a major (up to \$4.5 trillion: World Business Council for Sustainable Development) commercial opportunity and could support the development of new industries and jobs, reducing greenhouse gas emissions and increasing efficient use of natural resources (including energy, water, and materials).²⁴

A circular economy is a new way of looking at the relations between markets, customers, and natural resources. Its purpose is to change the existing economic model, which is based on the approach of "take, make, and dispose", and it utilizes the power of innovative business models and technology.²⁵

By and large, today's manufacturing takes raw materials from the environment and turns them into new products, which are then discarded into the environment. It is a linear process with a beginning and an end. In this system, limited raw materials eventually run out. Waste accumulates, either incurring expenses related to disposal or else pollution. Additionally, manufacturing processes are often inefficient, leading to further waste of natural resources.²⁶ In a circular economy, however, materials for new products come from old products. As much as possible, everything is reused, re-manufactured, or as a last resort, recycled back into a raw material or used as a source of energy.²⁷

An Overview of Circular Economy

2.1. Circular Economy in the European Union (EU)

The European Commission has adopted a new Circular Economy Action Plan (CEAP) as an agenda for sustainable growth in the EU. The European Commission reports that the new plan "aims to make the EU's economy fit for a green future, strengthen its competitiveness while protecting the environment and give new rights to "circular economy, to ensure that resources used are kept in the EU economy for as long as possible." The growing concerns in the EU have led to many environmental legislations and programs since the start of the millennium. The latest one binding the economy and energy within the scope of the low-carbon world is the EU Circular Economy. In December 2015, the European Commission published its Circular Economy Package that will enhance the strategy to protect the environment comprising an action plan with 54 concrete actions, a timetable, and a monitoring section.²⁸

The European Commission published a new EU Circular Economy Action Plan intending to make the economy fit for a green future and strengthen the EU's competitiveness while protecting the environment and giving new rights to consumers on 11th March 2020, as part of the Communication on a European Green Deal from December 2019. In total, the action plan has 35 legislative and non-legislative initiatives,

21 CSIRO. (2020, August) Circular Economy and Waste Management. (Circular Economy section, para. 1). Retrieved from <https://www.csiro.au/en/Research/Environment/Circular-Economy>

22 Circle Economy. (2020, January) [The Circularity Gap Report 2020](https://www.circularity-gap.world/2020#interactive). Retrieved from <https://www.circularity-gap.world/2020#interactive>

23 CSIRO, *ibid*, Circular Economy section, para. 1

24 *Ibid*

25 BCSD Turkey. (n.d.) Sustainable Industry and Circular Economy. Retrieved from <http://www.skdturkiye.org/surdurulebilir-sanayi-ve-dongusel-ekonomi>

26 UNIDO. (n.d.) Circular economy. Retrieved from <https://www.unido.org/our-focus-cross-cutting-services/circular-economy>

27 *Ibid*

28 Akkucuk, U. (2019) *The Circular Economy and Its Implications on Sustainability and the Green Supply Chain*. USA: IGI Global

which the Commission will implement in 2020-2023.²⁹ As to EU funding in 2016-2020, the Commission has stepped up efforts totaling more than €10 billion in support of the circular economy transition through Horizon 2020, Cohesion policy, EFSI, and the LIFE Programme.³⁰

The new CEAP has not only more comprehensive content than the 2015 Action Plan but also differs from the 2015 Action Plan in terms of both having a subtitle specific to climate change and giving place to leadership expressions at the global level in combating climate change. The concept of climate change has been given as the main field of action in the CEAP, and mainly includes the determination of the problems and their solutions in combating climate change. Another remarkable difference between the two action plans is that there are 36 references to the concept of "climate change" in the Commission Staff Working Document of the 2020 Action Plan. Although this is a significant difference in numerical terms, it also contains important differences regarding the solution.

The EU, which struggles with climate change in many ways, plays an important role both with its integrated policies and strategies it develops and by being included in international agreements. We see that this role is reinforced in the new Circular Economy Action Plan adopted in March 2020, with the statement that it will show leadership at the global level in the fight against climate change.

2.2. Circular Economy in Turkey

Circular economy continues to be understood primarily as waste management and a recycling strategy by most of the institutions, companies, and people, but economic opportunities are far broader and more diverse. With the right enabling conditions, circular economy could provide new opportunities for economic diversification, value-creation, and skills development. Even though, circular economy is still a new topic, which has been mostly discussed in the context of plastic pollution and zero waste in Turkey, there are new developments, which prove that the business sector is interested in the topic. There are some initiatives where waste is central to the discussions while there are some others where the transformation of the production patterns is considered.

Government Perspective and Action on Circular Economy in Turkey

The Zero Waste Project was initiated in 2017 in Turkey by the Ministry of Environment and Urbanization. 18.750 public institutions joined the project and 126 tonnes of paper, 8,7 tonnes of glass were recycled while 9,1 tonnes of organic waste was composted until May 2019, as reported by the Ministry of Environment and Urbanization.³¹

In line with the vision of The Zero Waste Project, most circular initiatives in Turkey are currently based on the utilization of waste. Some Turkish recycling companies are even importing waste for recycling.³² Turkey is the largest destination for waste exported from the EU, with a volume of around 11.4 million

29 European Investment Bank. (2020, May) The EIB Circular Economy Guide – Supporting the circular transition. Retrieved from https://www.eib.org/attachments/thematic/circular_economy_guide_en.pdf

30 Ibid

31 Nuroğlu, E. (2019, July 01). Döngüsel iktisat yolunda Türkiye: Sıfır Atık Projesi. AA. Retrieved from <https://www.aa.com.tr/tr/analiz/dongusel-iktisat-yolunda-turkiye-sifir-atik-projesi/1520219>

32 Netherlands Enterprise Agency. (2019, October). To Cycle or not to Cycle Towards a circular economy in Turkey. Retrieved from <https://www.rvo.nl/sites/default/files/2019/10/To-cycle-or-not-to-cycle.pdf>

tonnes in 2019. This was almost three times as much as in 2004.³³ However, according to the principles of a circular economy, it would be best to eliminate waste already at the level of product design. In contrast to the current 'take, make and waste' linear economy, in a circular economy waste does not exist and all products are made to be remade. That is why the Turkish government started focusing on waste management, but the plan is gradually shifting to cover the full economic cycle now.



The Ministry of Environment and Urbanization has recently started the development of “Regional Activity Center for Sustainable Consumption and Production (SCP / RAC) and Roadmap” to serve the implementation of the 2030 Agenda, to ensure the inclusion of resource efficiency practices in the industry, to encourage the development of environmentally friendly business models that support Circular Economy, and to create policy instruments that support these actions.³⁴ Sustainable Consumption and Production (SCP) approach is essential for a circular economy and already aligned with the new Circular Economy Action Plan of the European Union adopted in March 2020. SCP is also directly related to the 2030 Sustainable Development Goals of the United Nations to which Turkey attaches special importance.³⁵ The SwitchMed program implemented by the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC) of the United Nations Environment Programme Mediterranean Action Plan (UNEP/MAP) aims at supporting SCP practices for a circular economy in the Mediterranean Region. Preparation and implementation of Sustainable Consumption and Production National Action Plans (SCP NAP) by the countries are at the core of the program. Since Turkey is a party to the Barcelona Convention targeted by SwitchMed, we started to develop our SCP NAP as of June 2019 with the support of SCP/RAC.³⁶ In order to set a ground for the plan, this baseline report and a road map were prepared in order to evaluate related national regulations and current practices on SCP. Based on the scope and priorities determined, 4 sectors namely: food, fisheries, and agriculture; housing and construction; consumer goods and manufacturing; and tourism were selected for the study.³⁷

Most small and medium-sized enterprises, in Turkey, do not want to take risks by making this kind of structural changes. They prefer to be on the safe side and continue their traditional way of manufacturing without knowing the benefits deriving from circular economy. Some companies are even afraid they will lose reputation if they use secondary raw materials because their products will be considered second

³³ Eurostat. (2020, April) Turkey: main destination for EU's waste. Retrieved from <https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/DDN-20200416-1>

³⁴ <https://rec.org.tr/projeler/stu-uep-mevcut-durum/>

³⁵ MoEU (2020) Background Study In preparation of the Turkish SCP National Action Plan and Roadmap Final Draft

³⁶ Ibid

³⁷ Ibid

hand. That is why the government and civil society actors shall be more encouraging for the private sector and help increase public awareness about this topic.

Role of Civil Society Institutions/ Non-Governmental Organizations

SKD (BCSD) Turkey is a leading NGO working on CE in Turkey. **Turkey Materials Marketplace (TMM) Project is a functional and innovative cloud-based platform creating economic and environmental value through cross-industry materials reuse**, which has been run through the cooperation between the Business Council for Sustainable Development (BCSD) Turkey and the Turkish Sustainable Development Association. It functions as a digital platform where industries exchange materials. It is funded by the European Bank for Reconstruction and Development (EBRD) aiming to contribute to the CE transition in Turkey. There are more than 100 companies registered on the platform. Turkey Materials Marketplace (TMM) is for example facilitating the circulation of industrial waste as secondary raw material and it is showing that companies are willing to change when some incentive is provided.

Turkey Materials Marketplace (TMM) continues to support its members in identifying potential materials transactions and assessing the feasibility of implementing materials transactions through several technical support tools.

As a result of these studies, successful collaborations have been established among companies;

- Two platform members; P&G and MGD Marmara Recycling have successfully collaborated through The Circular Vouchers by completing “Re-evaluation of non-standard products, scrapped during production, for industrial purposes” project.³⁸

As of May 2020, 67 tons of non-standard products (detergent, soap, toothpaste, etc.) were converted into new products that serve as cleaning agents for carpets/cars, etc.³⁹

- PepsiCo, which produces energy by converting organic wastes in its biogas plant, aims to find alternative organic waste via the TMM platform and successfully collaborated with Aromsa. Through a previous transaction, 20 tons of food waste generated by Aromsa had been utilized by PepsiCo in energy production. With The Circular Vouchers (a TMM member-specific technical grant support), PepsiCo took a step further in their collaboration with Aromsa and has completed a comprehensive study to maximize process efficiency and the optimization of production specifications as well as controlling the quality. In line with the results of The Circular Voucher studies, Aromsa’s additional 32 tons of waste was converted to biogas and PepsiCo has committed to regularly process Aromsa’s waste thus reaching the highest efficiency in energy production. The applied study has shown that proper formulation increases biological performances of Aromsa’s organic wastes in PepsiCo’s processes and thus enables the production of a higher amount of electrical and heat energy. Within the collaboration established through the TMM

³⁸ Turkey Circular Economy Platform. (n.d.) Turkey Circular Economy Platform – 14th Transaction. Retrieved from https://donguseleekonomiplatformu.com/en/tmm/post_turkey-circular-economy-platform-14th-transaction_217.html

³⁹ Ibid

platform, Aromsa's food processing waste is periodically converted into biogas and used as energy in PepsiCo facility.⁴⁰

Regional Environmental Center (REC) Turkey is an independent international organization. It is not-for-profit and has an unbiased structure. REC Turkey Country Office (REC Turkey) started to operate in May 2004 in Ankara. REC Turkey plays an effective role in the process of environmental problem-solving in Turkey by supporting collaboration between the government, non-governmental organizations (NGOs), private sector and other environmental stakeholders and by ensuring public participation in the information sharing and environmental decision-making processes.

REC Turkey / E-waste report

"Beyond Waste" report, which is prepared by the Regional Environmental Center (REC) Turkey with the support and cooperation of [S360](#) and Vodafone is online. The report took a picture of both the global and national issues and aimed to create a base for the solutions to be produced to the [e-waste](#) problems in Turkey. In the following process, REC wants to produce solutions to these problems in a participatory way, especially among young people, with the "Open Innovation Platform".⁴¹

2.3 Legislation: general overview and main aspects

The environmental policy is regulated under the Environmental Law No.2872 (1983). Municipal waste, packaging, medical, hazardous wastes, excavation soil, construction and demolition, batteries and accumulators, engine oils, industry oil, end-of-life vehicles, electric and electronic wastes are all regulated under the Law. Environmental Law, Metropolitan City Law and Municipal Law refer to waste management rules.

Law	Content
Environmental Law No. 2872	to protect and improve the environment(...)of all citizens; make better use of and preserve land and natural resources(...)prevent water, land and air pollution; by preserving(...)vegetative and livestock assets and natural and historical richness;(...)secure health and life conditions in conformity with economical and social development objectives.
Greater/Metropolitan City Law No.5216, 10.07.2004	to regulate the legal status of the greater city management, and to ensure undertaking of services effectively, efficiently and in harmony within a plan.

⁴⁰ Turkey Circular Economy Platform. (2020, March) 12th Transaction: PepsiCo & Aromsa. Retrieved from <http://turkey.materialsmarketplace.org/news>

⁴¹ For more information: <https://rec.org.tr/wp-content/uploads/2020/06/AtiginOtesinde2020.pdf>

Municipal Law No.5393, 03.07.2005

to lay down the establishment, organs, administrations, duties, powers, responsibilities and working procedures and principles of municipalities.

Energy Efficiency Law No.5627, 02.05.2007

the efficient use of energy, the prevention of waste, reduce energy costs and covers rules for the industry, big buildings, project support, consultancy companies, voluntary agreements.

Water Law

In draft

National Performance

3.1. Regulation Related to Circular Economy

Regulations	EU Directives
Waste Management	
Regulation on Waste Management (29314 th Official Gazette, 02.04.2015)	2008/98/EC (framework)
Regulation on the Control of Packaging Waste (30283 th , 27.12.2017)	2015/720/EU
Regulation on the Control of Waste Electrical and Electronic Equip. (28300 th , 22.05.2012)	2012/19/EU
Regulation on the Control of Waste Batteries and Accumulators (25569 th , 31.08.2004)	2006/66/EC
Regulation on the Control of Waste Oils (26952 th , 30.07.2008)	2008/98/EC (framework)
Regulation on the Landfill of Waste (27533 th , 26.03.2010)	2008/98/EC (framework)
Regulation on Waste Incineration (27721 th , 06.10.2010)	2000/76/EC
Regulation on Herbal Oil (29378 th , 06.06.2015)	2004/24/EC
Regulation on Control of Medical Wastes (29959 th , 25.01.2017)	
Regulation on Ship Wastes and Control of Waste (25682 th , 26.12.2004)	1257/2013

Regulation on Control of End of Life Vehicles (27448 th , 30.12.2009)	2017/2096/EU
Regulation on Control of PCBs and PCTs (26739 th , 27.12. 2007)	1996/59/EC
Regulation on Zero Waste (12.07.2019)	2008/98/EC (framework)
Energy Efficiency	2006/21/EC
Regulation on Mining Waste Management	2012/27/EC
Regulation on Energy Efficiency (30470 th , 06.07.2018)	2010/31/EU
Regulation on Energy Performance of Buildings (30051 th , 28.04.2017)	2009/125/EC
Regulation on Eco-design for Energy-Related Products (27722 th , 07.10.2010)	
Regulation on Environmental Labelling (30570 th , 19.10.2018)	
Water	
Regulation on Urban Waste Water (26047 th , 08.01.2006)	
Food	2000/60/EC (framework)
Regulation on Waste Management (29314 th , Official Gazette, 02.04.2015)	
Construction and Demolition	2008/98/EC (framework)
Regulation on Excavated Soil, Construction and Demolition Waste (25406 th , 18.03.2004)	2008/98/EC (framework)
Ecolabel	
Regulation on Eco-label (30570 th , 19.10.2018)	66/2010
Regulation on Energy Efficiency Labelling	2010/30/EC

3.2. National Initiatives

As mentioned above, circular economy is still a new topic, which is mostly discussed in the context of plastic pollution and zero waste in Turkey. However, there are new developments, which prove that the business sector is interested in the topic. There are some initiatives where waste is central to the action

while there are some others where the transformation of the production patterns is considered. The Ministry of Environment and Urbanization has recently started the development of “Regional Activity Center for Sustainable Consumption and Production (SCP / RAC) and Roadmap” to serve the implementation of the 2030 Agenda, to ensure the inclusion of resource efficiency practices in the industry, to encourage the development of environmentally friendly business models that support the Circular Economy, and to create policy instruments that support these actions.⁴²

There are important developments on the business side as well:

Arkim

Arkim Chemicals manufactures food preservatives from natural sources of calcium. It can be utilized in various different sectors ranging from packaged food, vegetable, fruit, pharmaceutical industry, to cosmetics. It prolongs the shelf life of the products through natural ingredients and has no side effects.⁴³ Arkim produces food preservative from eggshell waste from the liquid-egg producing company Anako.⁴⁴ This eggshell waste would otherwise be landfilled and that is why this is a good example of closing the loop. The food preservative also has a higher value than the eggshell waste, which makes this a good example of upcycling. Additionally, the food preservative also has a biological meaning in the sense that it is environmentally friendly. Altogether, this is a perfect example of industrial symbiosis and the advantage of circular economy.⁴⁵

Whole Surplus (Fazla Gıda)

The whole Surplus was established in 2015, with the idea of finding solutions through a technology-based initiative to the Climate Action. Carbon emissions from food waste constitute 8% of the overall emissions causing climate change. The whole Surplus was established with the aim of creating technology-based solutions to reduce food waste in the food supply chain by 50% until 2030. From the first day, they started to create food waste awareness in the private sector and aimed to set an example for the establishment of new startups.

The whole Surplus is an effective waste management platform for businesses. It creates economic and social value from surplus food by managing the unsold products (food) of the businesses in the most effective way.⁴⁶

Hagelson

It is an R&D company established with the support of TÜBİTAK (The Scientific and Technological Research Council of Turkey) in March 2016. The company is mainly working on polymer materials and new recycling systems.

Thanks to its patented new technology, Hagelson manufactures new plastic raw material from the recycling of leftover and waste carpets. Thus, eliminates the problem of disposing of the woven residual carpets that accumulate during the manufacturing, the leftover parts formed in the carpet floor covering

⁴² <https://rec.org.tr/proieler/stu-uep-mevcut-durum/>

⁴³ Turkey Circular Economy Platform. (n.d.) What are the examples? Retrieved from https://donguseleekonomiplatformu.com/en/knowledge-hub/article_3-What-are-the-examples_13.html

⁴⁴ Turkey Materials Marketplace. (December 2018). 5th material transaction is completed!

⁴⁵ Netherlands Enterprise Agency. (2019, October). To Cycle or not to Cycle Towards a circular economy in Turkey. Retrieved from <https://www.rvo.nl/sites/default/files/2019/10/To-cycle-or-not-to-cycle.pdf>

⁴⁶ Turkey Circular Economy Platform. (n.d.) What are the examples? Retrieved from https://donguseleekonomiplatformu.com/en/knowledge-hub/article_3-What-are-the-examples_13.html

business or the old waste carpets collected during the project phase, and converts them into raw materials and returns them back to the economy.

Recycling of a 500 square meter carpet protects 12 m² of land and 29m³ of water from becoming polluted while preventing 2,2 tons of CO₂ from being emitted. It also equals to the one-month energy consumption of 7,2 households. Approximately 400 kilograms of plastic raw materials can be produced from a 500 m² waste carpet.⁴⁷

Komporize

Turkey's tea production ranks fifth in the world, with approximately 1.2 million tons per year. Tea fiber waste is produced during this process. The amount of tea fiber that emerges is significant as 60-70 thousand tons annually, which are not evaluated in any way and destroyed in the form of burning or being left to rot. Komporize is a start-up that is dedicated to overcoming the negative environmental impact of plastics by producing alternative biocomposite materials, using inert agricultural fiber wastes. The fiber ratio in the mixes is up to 90% depending on the place of use. Komporize aims to reduce the harm of these plastics to the environment by ensuring that these products disappear earlier in nature than other plastics. The produced raw materials appeal to companies that provide end-products for the automotive, furniture, construction, architecture, toys and consumer industries.⁴⁸

Biolive

Biolive is a company that designs and develops the production process of bio-based plastics from the olive kernel, produces bio-based granules and is also currently continuing research and product development at Yıldız Technical University Technopark. It was established in 2016 as a start-up at the Istanbul Technical University Technopark. Later it became a company with the investment it received from Vestel Ventures within Zorlu Holding in 2017. Currently, the company works on bioplastic production for Vestel refrigerators. These bioplastics can be used in pet bottles, disposable cutlery and food packaging, which can be lost in nature within 3-5 months. It prevents a significant amount of plastic waste.⁴⁹

Toyi

Toyi, an award-winning project, is a limitless creative play kit without instructions that enables children to transform everyday objects around them into unique toys. With a kit consisting of wheels, feet, hands, eyes, joints, sticks, flexible connectors kids aged 6+ can transform any object around them into a toy of their own creation. There are no instructions or rules in Toyi kits. The entire process is left to children's imagination. With the open-ended play experience Toyi provides, children can make a limitless number of toys using their creativity. Toyi supports creativity, upcycling and 21st-century skills. Toyi helps children learn upcycling through play (For example, Turn a water bottle into a six-armed robot, an old box into a train compartment or a pine cone to a cute monster etc.). With Toyi, children are making their own toys

⁴⁷ [Ibid](#)

⁴⁸ Netherlands Enterprise Agency. (2020, May) Circular Food Turkey. Retrieved from <https://www.rvo.nl/sites/default/files/2020/05/Circular-Food-Turkey.pdf>

⁴⁹ Ibid

by redefining and redesigning everyday objects around them. Toyi helps children become more creative, productive and conscious consumers.⁵⁰

TRT-2 / Geri dönüşen sanat

The 6-part documentary series which is titled “Geri dönüşen sanat (Recycled art)” focused on artists who produce works of art with creative designs using waste materials, and on the harmonious transformation of recycled art, environment and nature awareness and aesthetics into art, was shown on TRT 2, a Turkish culture and art television channel.⁵¹

4. Findings

Production and consumption

According to the data of Eurostat, the statistical office of the European Union (EU), the EU exports of waste reached 31.0 million tons, with a value of EUR 13.4 billion in 2019. As reported by Eurostat, Turkey ranked first with 11.4 tons of waste imported from the EU, well ahead of other countries. While India ranked second by having imported 2.9 million tons of waste from the EU countries, Britain ranked third with 1.9 million tons.¹⁷² The Ministry of Environment and Urbanization has recently started the development of “Regional Activity Center for Sustainable Consumption and Production (SCP / RAC) and Roadmap” to serve the implementation of the 2030 Agenda, to ensure the inclusion of resource efficiency practices in the industry, to encourage the development of environmentally friendly business models that support Circular Economy, and to create policy instruments that support these actions.⁵²

Waste Management

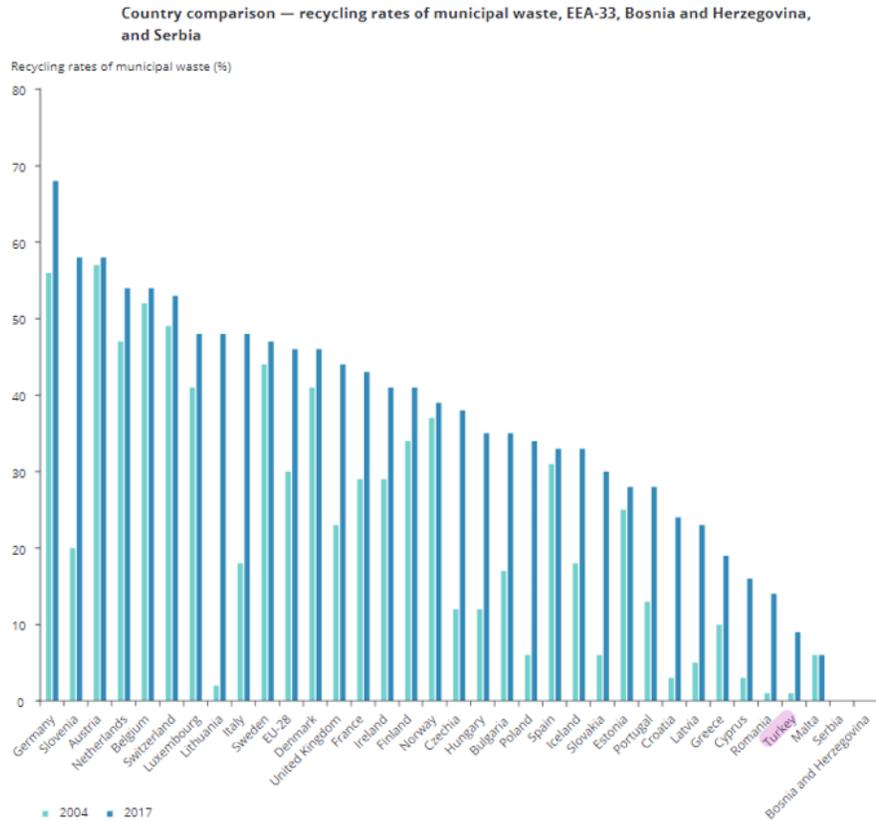
Turkey is mostly aligned with the EU Directives on waste management. However, implementation has not improved enough yet. According to the EEA report, in 2017 Turkey had the lowest recycling rates of municipal waste after Malta and Serbia in Europe.⁵³

⁵⁰ <https://toyi.io/en/whatistoyi/>

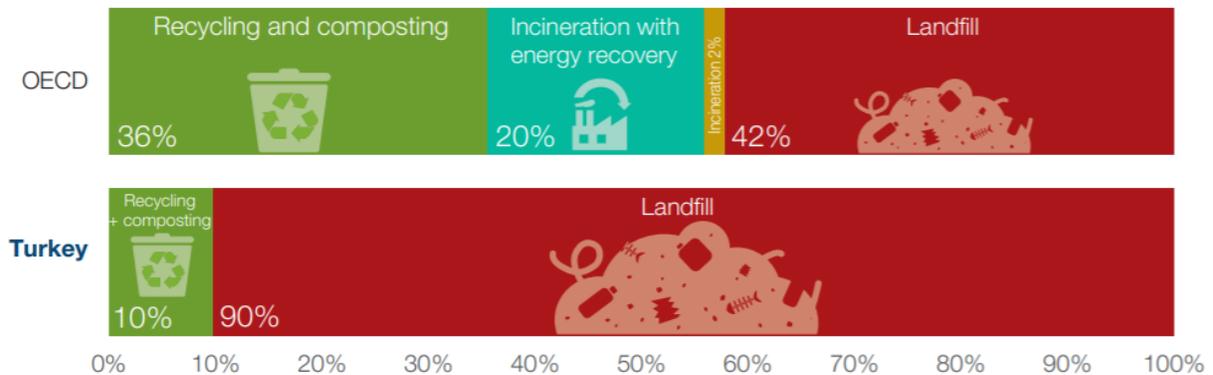
⁵¹ <https://www.trt2.com.tr/sanat/geri-donusen-sanat>

⁵² <https://rec.org.tr/projeler/stu-uep-mevcut-durum/>

⁵³ https://www.eea.europa.eu/publications/soer-2020/chapter-09_soer2020-waste-and-resources/view



Some progress has been made in expanding waste treatment infrastructure. About 90% of municipal waste is sent to landfills, and only a small quantity is recovered. Only 10% of municipal waste was collected separately in 2018.⁵⁴



Source: OECD (2018), "Municipal waste, generation and treatment", OECD Environment Statistics (database)

Secondary Raw Materials

⁵⁴ OECD. (2019, February) OECD Environmental Performance Reviews: Turkey: 2019. Retrieved from <http://www.oecd.org/env/country-reviews/Highlights-Turkey-2019-ENGLISH-WEB.pdf>

The work on the use of secondary raw material (SRM) in Turkey is at very early stages. Most small and medium-sized enterprises in Turkey do not want to take risks and trust their traditional way of manufacturing. Some companies are even afraid they will lose reputation if they use secondary raw materials because their products will be considered second hand. That is why the government can be more encouraging for the private sector and help increase public awareness about this topic. Turkey Materials Marketplace is for example facilitating the circulation of industrial waste as secondary raw material and is showing that companies are willing to change when some incentive is provided.

Competitiveness and Innovation

Regarding CE, Turkey has not had a competitive and innovative profile. It is following the developments especially in Europe and aims to adapt them to Turkish legislation and implementation. The business sector has an important role in understanding and improving the CE practices in Turkey. The business sector is interested in the concept and puts capacity for R&D and implementation. On the other hand, as stated above, companies are willing to change when some incentive is provided.

5. Concluding Notes

Circular Economy has been mainstreaming both in European and Turkish context. There are concrete policies and implementation examples in the EU. Activities related to waste management dominate the public policy agenda in Turkey while the business sector is interested in CE as the new way of designing and making business. However, circular initiatives are not visible enough to trigger great impact such as creating jobs and adding value. The fact is that the private sector together with national and regional authorities, cities and citizens are still relatively uninformed of the potential benefits of the circular economy concept and they also need to mobilize. Information provision, awareness-raising, education, training and capacity building on the concept of circular economy should be considered. More ambitious and better coordinated circular economy policies need to be established and implemented. Strategic planning, substantial investment and stronger administrative capacity are required as well.

One of the main requirements for a CE is that different stakeholders need to work together. The government, private sector and academia can all benefit from the opportunities provided by circular economy. Moreover, cross-border partnerships can also be established. Governments could exchange knowledge on the procurement of circular economy projects and necessary legislation adoption. The private sector, NGOs and academia could work together to share best-practices about waste management and co-funding of R&D projects in this pioneering topic.