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Circular Economy Country Specific Report

Written Contribution for the 2018 Annual Report

Republic of Macedonia

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1. Introduction

1.1. Circular Economy in the European policy context

Circular economy is defined as an economy "where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised". As a concept, it represents a framework that can be pursued to move towards an economy in which what is regarded as waste today can enter the economic cycle again as a resource. In a way, it is related to the concept of sustainable development, which should become a determinant for the development of each country, in the wider context leading to alignment of the long-term national economic and social interests with the environment protection goals.

The circular economy concept acknowledges the constraints of natural resources and offers an approach to cope with and move towards a more economically, socially and environmentally sustainable world.

The European Commission recognised the value of the circular economy and in 2015 adopted a Circular Economy Package and an Action plan (COM(2015) 614)[1], aiming to change current "take-make-dispose" model of production and consumption to one that keeps resources circulating in the economy for as long as possible, through better design, reuse and recycling.

To implement the Circular Economy Action Plan, in January 2018 the European Commission adopted a set of new measures[2], including:

- EU Strategy for Plastics in the Circular Economy
- Communication on options to address the interface between chemical, product and waste legislation that assesses how the rules on waste, products and chemicals relate to each other
- Monitoring Framework on progress towards a circular economy at EU and national level
- Report on Critical Raw Materials and the circular economy that highlights the potential to make the use of the 27 critical materials in the economy more circular.

The introduction of Monitoring Framework is an important step towards setting measurable indicators to follow the progress in achieving the set goals and for pinpointing the potential weak spots for additional interventions, through either legislation regulations or investments.

1.2. Circular Economy in the Republic of Macedonia

Concerning the situation in the Republic of Macedonia, even though the notion of "circular economy" is yet to explicitly enter in the legal framework through the new Law on Waste Management and the Draft Industrial Strategy with a focus on Manufacturing, the concept of circularity in the economy is not entirely new. The use of secondary row materials as resources, in particular various types of metal and paper, has been long present in the country economic cycle of production and trading activities.

The current legal environment that profiles the circularity of the economy, defined by a corpus of laws, regulations, and strategic national documents and action plans, does provide basis for implementation of

[1] https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52015DC0614

[2] http://ec.europa.eu/environment/circular-economy/index_en.htm

the concept of circular economy in the country. Still, there is a strong need for many improvements in the current legal framework that will enhance the country's ability to make better use of its resources and the lifecycle of materials, products and services.

The interest of the wider society, including scholars, researchers, NGOs and media, relating to circular economy potentials and practices in the country has also been present and increasing in the past two years, manifested in a form of case studies, conferences, media articles and CSO initiatives that explicitly target the concept of circular economy. Yet, the level of knowledge and awareness among all concerned parties (authorities, business sector, CSOs, citizens and the media) is still at a low level.

The aim of this report is to contribute to mapping the situation in the country with regards to the existing (un) enabling environment (legal, economic, social) and to support awareness and advocacy efforts aimed at increasing knowledge regarding the circular economy and influencing both general public and respective authorities on the necessity and benefits of this particular new approach.

2. Monitoring progress

Monitoring the transition towards achieving more sustainable circularity of the resources in the economic cycle in the country is a challenging task, especially in relation to availability of and accessibility to relevant, verifiable and up-to-data data, and the indicators to measure the progress.

2.1. Legislation: general overview and main aspects

No	Name	Relevance	EU levers (examples)	
Production and consumption				
1	Self-sufficiency for raw materials	The circular economy should help to address the supply risks for raw materials, in particular critical raw materials.	Raw Materials Initiative; Resource Efficiency Roadmap	• National Strategy on Sustainable Development (2010) • National Strategy for Sustainable Development of Forestry (2006); • National Strategy for Clean Development Mechanism (2007) • National Strategy for Environmental Approximation (2008) • NPAA 2017 (2017-2019) • Strategy for Renewable Resources (2010); • Strategy for Energy Efficiency (until 2020); • Water Strategy; • National Strategy for Clean Development Mechanism (2007) • Economic reforms (2018-2020) • Law on Public Procurements (2018) - *new*, • Law on Waste Management (2018) - *new* • Waste Management Strategy (2008-2020) • National Plan for Waste Management (2009-
2	Green public procurement*	Public procurement accounts for a large share of consumption and can drive the circular economy.	Public Procurement Strategy; EU support schemes and voluntary criteria for green public procurement	
3a-c	Waste generation	In a circular economy, waste generation is minimised.	Waste Framework Directive; directives on specific waste streams; Strategy for Plastics	

4	Food waste*	Discarding food has negative environmental, climate and economic impacts.	General Food Law Regulation; Waste Framework Directive; various initiatives (e.g. Platform on Food Losses and Food Waste)	2015) – *outdated* • Regional and local waste management plans • National Waste Management Plan (2018-20140) - *new* • Plan for Prevention of Waste Generation (2018-20140) - *new* • Electrical and Electronic Waste Management Plan with feasibility study (2013 – 2020) • Plan for closing of non-compliant landfills in the Republic of Macedonia (2011) • Law on Food Safety (2010) & a corpus of legal acts related to food
Waste management				
5a-b	Overall recycling rates	Increasing recycling is part of the transition to a circular economy.	Waste Framework Directive	• Waste Management Strategy (2008-2020) • Law on Waste Management (2018) – new • Law on packaging and packaging waste Management (2009) • Law on batteries and accumulators waste management (2010) • Law on electrical and electronic equipment waste management (2012) • National Plan for Waste Management (2009-2015) – outdated • Regional and local waste management plans • National Waste Management Plan (2018-20140) - new • Plan for Prevention of Waste Generation (2018-20140) - new • Electrical and Electronic Waste Management Plan with feasibility study (2013 – 2020) • Program for packaging waste management (2011-2020) • Set of Rulebooks on transposing Landfill Directive (1999/31)
6a-f	Recycling rates for specific waste streams	This reflects the progress in recycling key waste streams.	Waste Framework Directive; Landfill Directive; directives on specific waste streams	
Secondary raw materials				
7a-b	Contribution of recycled materials to raw materials demand	In a circular economy, secondary raw materials are commonly used to make new products.	Waste Framework Directive; Eco-design Directive; EU Ecolabel; REACH; initiative on the interface between chemicals, products and waste policies; Strategy for Plastics; quality standards for secondary raw materials	• Waste Management Strategy (2008-2020) • National Strategy for Clean Development Mechanism (2007) • Set of Rulebooks on eco labelling (food, chemicals, textile, wood, detergents, tourists accommodation) • Rulebook on the form and content of the forms for transboundary waste transfer *Note:* • *Import of waste that can be safely processed, used as a raw material or used as a source of energy is permitted.* • *Export of waste that can be processed and disposed of without any hazard to the*

8	Trade in recyclable raw materials	Trade in recyclables reflects the importance of the internal market and global participation in the circular economy.	Internal Market policy; Waste Shipment Regulation; Trade policy	*environment, human life and health in the importing country is permitted.* • *Import, export and transit of hazardous waste in the Republic of Macedonia is performed according to the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and its storage.*
Competitiveness and innovation				
9a-c	Private investments, jobs and gross value added	This reflects the contribution of the circular economy to the creation of jobs and growth.	Investment Plan for Europe; Structural and Investment Funds; InnovFin; Circular Economy Finance Support Platform; Sustainable Finance Strategy; Green Employment Initiative; New Skills Agenda for Europe; Internal Market policy	• Economic reforms (2018-2020) • Industrial Strategy with a focus on the Manufacturing Sector (2018) – *draft* • Law on Financial Support of Investments (2018) – new • Horizon 2020 (Financial support from the clean development mechanism for the construction and development of bio-digesters, 2016) • Fund for Innovations and Technology Development (support for micro, small and medium size enterprises) *Note:* *At the European Innovative Ranking List (2018)[3] the Republic of Macedonia is assessed as a "modest innovator", with progress in relative performance by 12.2% between 2010 and 2017, compared to EU in 2010, and 9.6% between 2010 and 2017, compared to EU in 2017*
10	Patents	Innovative technologies related to the circular economy boost the EU's global competitiveness.	Horizon 2020	

2.2. Quality of Data

Quality data generation (and availability) is prerequisite for designing evidence-based strategies and for further monitoring of the progress in any sector, including the developments in the sectors that are fundamental for the circular economy (aspects of circularity of resources in the production and consumption, from waste management, secondary raw materials, stimulation of circularity of resources in competitiveness and innovation initiatives).

For instance, concerning waste management, even though there are legal provisions (a Rulebook that proscribes a standardised waste reporting structure) that require the participants in the production and consumption cycle to report the data to the competent state institutions, the data is of poor quality. As noted in the study "National Assessment of the Conditions on Waste and Roadmap towards Improvement of Waste Management in the Republic of Macedonia", there is no mechanism to verify and crosscheck the quality of the data supplied. In addition, only a few landfills have equipment for measuring the weight of the waste, which means that there is no way to accurately record the amount of waste that is deposited at the landfill, let alone to quantify it by type of waste (for example, food waste). Different numbers are obtained from different official sources (for example, the Macedonian Environmental Information Centre and the State Statistical Office). There are irregularities in relation to the data provision, which makes it difficult to measure the performance in respect to the key set goals.

[3] EIS, Country profiles https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

As for the infrastructure and type of landfills, there are no landfills designed to meet the EU standards, nor at least close to that level. Most of the waste is deposited in the 43 official municipal landfills (according to the latest figures from the State Statistical Office[4]). Only one of these landfills - the landfill Drisla in Skopje - has a permit from the MoEPP, and large quantities of waste still end up at more than 1000 illegal dumpsites.

On the other hand, it is clear that efforts are being made to provide data, but there seems to be a need for a mechanism that will require (and ensure) the submission of quality data (for example, aggregated and/ or segregated by streams of waste, recycling and reusability) and availability for their verification.

2.3. CE Initiatives in Macedonia

The role of information provision, awareness raising, education, training and capacity building on the concept of circular economy should not be underestimated.

In the recent years, there have been a number of initiatives and actions, which promote the concept of circularity of resources (materials, goods, and services) in the economy cycle, even though many were not explicitly named as "circular economy" activities.

- ***Car-sharing***

SocialCar[5] is a research and innovation project that aims to include the carpooling system in existing public transport systems with the help of powerful software for planning and integrating public transport databases, joint trips and activation of citizens through crowd-sourcing. The City of Skopje is a partner this project, funded by the European Research and Innovation Program Horizon 2020

- ***Reduction of food waste***

Currently there are several ongoing initiatives (WSS-Effect,[6] Let's do it Macedonia[7]) that aim to reduce food waste and stimulate sustainable use of food in the food chain in Macedonia, but also an enactment of legal instruments that will better regulate the chain of generation, collection and re-use of food waste.

- ***Smart cities***

MAtchUP[8] is a smart city project that includes three leading cities: Valencia (Spain), Dresden (Germany) and Antalya (Turkey) and four following cities: Ostend (Belgium), Guercia (Israel), Skopje and Kerava (Finland) aimed to design and implement a palette of innovative solutions in the energy, mobility and ICT sectors that will serve as a model of urban transformation for other cities in Europe and beyond. The project is funded by the European Research and Innovation Program, Horizon 2020.

- ***Second hand clothing and footwear***

The tendency to use on-line platforms (like "Clothes as new"[9] with more that 9.500 followers, "Children clothes as new"[10] with more that 10.500 followers) for exchange and selling of second-hand clothing and footwear is growing. There are similar initiatives for the second-hand furniture ("Second-hand furniture"[11] with around 4.000 followers).

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[4] Environment Statistics 2017, pp. 55, http://www.stat.gov.mk/Publikacii/ZivotnaSredina2017.pdf

[5] http://socialcar-project.eu/about-project

[6] https://wsseffectmk.org/

[7] http://ajdemakedonija.mk/donations/end-hunger-form/

[8] http://www.matchup-project.eu/

[9] https://www.facebook.com/makova.jana/

[10] https://www.facebook.com/detskaobleka.kakonova/

[11] https://www.facebook.com/Poloven-Mebel-1768856436702690/

- ***Waste as resource for energy production***

Macedonia is choking in organic waste that can be used for alternative energy sources. Therefore, maximum commitment for selection and recycling of this type of waste is required. Every year, when scrubbing trees and public green areas in the cities, huge quantities of waste wood mass are created and unnecessarily end up in landfills.

The public communal enterprise from Strumica purchased a crushing machine for wood waste, which will produce a raw material for the production of pallets for heating.

Biomass waste as an alternative source of energy can be used in the industry. "Usje" (a cement production plant) has recently procured a system for the production of energy from biomass waste (rice husk).

- ***Waste recycling companies***

Metal: Novometal DOO Skopje[12] is a company that deals with storage, treatment, transport and recycling of non-hazardous and partially non-hazardous waste. Most of the waste metals recycled by the company come from industrial waste as well as from various production processes. The recycling process of metals is usually composed of sorting, cutting or baling, that is packaging of waste metals according to industrial or other waste standards. Novometal has a permit for collecting all types of non-hazardous waste, both metallic and non-metallic (excluding municipal waste). Most commonly recycled metals are iron and steel, copper and brass, aluminium and bronze, and other metals. In addition to metals, the company also recycles accumulators and waste oils: (hydraulic oil, engine and transmission oil). The company possesses certificates for integrated quality management, environment protection, and occupational health and safety (ISO 9001: 2008, ISO 14001: 2004 and OHSAS 18001: 2007)

Plastic: Greenteh MK doo[13] is a member of GREEN GROUP - the largest recycling group in South-Eastern Europe. Grinteh MK has a recycling plant for waste polyethylene (PE) and polypropylene (PP). The production has two technological lines: a line for grinding, washing and drying, and a granulation line. The capacity of the waste polyethylene (PE) and polypropylene (PP) recycling plant is 200 tons per month. The obtained granulates are used for re-production of the following types of plastic products: foil, bags, products produced by injection, blow-moulding products, tubes, etc

Glass: Akron doo[14] is the only company in Macedonia that deals with the treatment of waste glass. The company follows the world standards for waste utilization and, through their implementation in the processes of work, makes a step forward in the waste management in Macedonia. Glass is the only packaging material that can be recycled unlimitedly while retaining the same quality. Over 40,000 tons of waste glass ends in landfills throughout Macedonia every year. Recycling of one tone of waste glass prevents the release of 4 kg of exhaust gases into the atmosphere. Separation and recycling of glass can significantly reduce energy consumption for glass production. One tone of recycled glass saves: 42 kWh electricity, 19l of oil, 2 m3 landfill space, 603 kg sand, 196 kg Na2CO3 (soda), 196 kg CaCO3 (limestone) and 70 kg feldspar.

Wood: The pallet production plant **EkoLife**[15], located in Ginovce (municipality of Rankovce), was opened in August 2018. In this factory, pellets will be produced according to the highest European standards, from domestic and foreign raw materials, with a production capacity of up to 3 tonnes per hour. In order to create working conditions for the companies from the wood industry, the Ministry of

[12] www.novometal.mk

[13] http://www.grinteh.com.mk/

[14] http://www.staklo.mk/

[15] https://plusinfo.mk/отворена-прва-фабрика-за-производств/

Agriculture, Forestry, and Water Economy (MAFWE) calls upon the public enterprise for management of the state forests "Makedonski Sumi", as well as the entities that manage the protected areas, to develop their production in the direction that will enable the supply of appropriate raw material to entities that produce energy from renewable sources, such as this pellet production plant. The pellets have the lowest emission value compared to coal, oil and firewood, and according to the research, heating with pellets pollutes 20 times less than with firewood. The use of pellets for heating of household and business facilities in the European Union countries has been increasing year by year.

- ***Waste in arts***

Lately, there are number of emerging initiatives by artists and craftwork associations who use waste (glass, plastic, textile, wood , scrap metal, etc) for their work, by that giving it an added value and promoting the prolonged life of goods and materials, but also supporting the concept of circular economy in practice.

3. Findings

Using the approach and logic of the EU proposed Monitoring framework and indicators[16], the assessment of the current state is grouped under the following stages and aspects of the circular economy: (1) production and consumption, (2) waste management, (3) secondary raw materials and (4) competitiveness and innovation. This broadly follows the logic and structure of the EU circular economy action plan.

3.1. Production and consumption

Limited progress can be observed towards more circular trends in production and consumption, in terms of waste generation.

The indicator on **self-sufficiency** is related to measuring the extent to which the country is dependant to supply of raw materials. In that respect, Macedonia belongs to the group of raw materials dependant countries.

According to the latest edition of "Macedonia in figures 2018"[17] of the Statistical Office of the Republic of Macedonia, in the period 2007 - 2017 the commodity exchange with foreign countries shows the positive trend of increase of the coverage of the import with export. Thus, in 2017, the export participates with 42.4% in the scope of the trade, an increase of 0.82% compared to 2016. On the import side, there is a slight decrease in the share of imports in the volume of exchanges, which contributes to increasing the coverage of the import with exports.

For example, when segregated by sectors of the Standard International Trade Classification, the country's commodity exchange balance of non-food raw materials, except fuel, for 2016 and 2017 is at the side of export[18] (even though more in-depth analysis might show a different perspective of this data).

Concerning energy, in 2016, the energy dependence of the Republic of Macedonia on imports was 58.8%. The final energy consumption was 895 kgoe per capita, while the final electricity consumption was 2 988 kWh per capita. However, the information on the share of production of renewable energy and its participation in the balance of consumption for the year in question (2016) is not provided.

[16] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:29:FIN

[17] Macedonia in Figures, pp 49, http://www.stat.gov.mk/Publikacii/MakBrojki2018_mk.pdf

[18] Macedonia in Figures, pp. 50, http://www.stat.gov.mk/Publikacii/MakBrojki2018_mk.pdf

Public Procurement represents a substantial share of the GDP of any country, including Macedonia. It can give substantial boost of the so-called **green public procurement,** which in turn can perform as a driver for the circular economy and for innovation. In the last seven years, (2010-2016) public procurements were from 25% to 37% of the state budget. In 2017, the Public Procurement represented only 19% of the country's budget, which was 11 percentage points less than in the previous year (2016)[19]. There are no in-depth analyses whether and to what extent green public procurement conditions were either requested, or met. The new Law on Public Procurement[20] foresees provisions that will enable the introduction of certain environmental criteria in the public procurement procedures, in accordance with the regulations on environmental protection and in line with the relevant provisions of the directives and European trends to encourage "green public procurement". However, it is yet to be seen how this will function in practice.

The **municipal waste generation** [21] per capita in 2017, (an average of 379 kg per capita) has dropped by 1.3 % compared to 2016. Municipal waste is waste collected by or on behalf of municipal authorities. It consists of waste from the households, including the bulky waste, similar waste from commercial and trade industries, official buildings, institutions and small businesses, waste from gardens, street waste, the content of waste containers and the waste from market cleaning. The State Statistics Office gathers the data on the amount of collected waste via the municipal public enterprises' annual reports; the data on the generated waste is calculated based on estimation. Therefore, the quantities of generated municipal waste per capita in the period between 2008 and 2017 are to be taken as estimates.

Table: Municipal waste generation per capita in the period 2008-2017 (Source: State Statistical Office)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Generated waste (in tones)	713564	725976	721507	735250	786909	792785	765156	786182	796585	786881
Annual amount per capita in kg	349	354	351	357	382	384	370	380	384	379

Reducing **food waste** is perceived to have an enormous potential for saving the resources we use to produce the food we eat. However, as the food waste occurs in all stages of the food production (harvesting, conservation, etc,) and distribution (in shops, restaurants, catering facilities, at home) chain, it is principally very difficult to quantify it. Especially, when official or officially verifiable data is not publicly available (or does not exist). Information on the annual amount of food waste in Macedonia, used by various actors that work in this area, is based on estimates and partial data, provided by the public communal enterprises and landfill managing companies.

In absence of official data on food waste, information on waste, created by different sectors of the food industry and the beverage industry in Skopje for 2015, obtained from secondary sources[22], can be used to illustrate the situation in the country.

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[19] http://balkantenderwatch.eu/local/uploaded/MKD%20local/Извештај%20од%20мониторингот%20на%20јавните%20набавки%20во%20Република%20Македонија%2030.pdf

[20] National Electronic Registry of Regulations of the Republic of Macedonia (ENER) https://ener.gov.mk/Default.aspx?item=pub_regulation&subitem=view_reg_detail&itemid=Xp2x6ms4eMDvLz1aB8J7aA==

[21] State Statistical Office, News Release No, 9.1.18.01 from 20.04.2018

[22] Guidance on anaerobic digestion of waste from the food industry, pp.49 http://www.skopje.gov.mk/UploadedFiles/D3%202%20-%20Guildelines%20final%20version%20MK.pdf

Table: Waste created by different sectors of the food industry and the beverage industry in Skopje (Drisla Skopje DOO, 2015)

Activity	Business entities (number)	Quantity of generated waste (tones per year)
Processing and preserving of meat and production of meat products	20	445
Processing and preserving of fish, shellfish and molluscs	5	34
Processing and preserving of fruits and vegetables	8	166
Production of vegetable and animal oils and fats	1	14
Production of dairy products	9	463
Production of bakery products and pasta	3	68
Production of other food products	7	18
Production of candies and sweets	10	195
Production of beverages	9	476
Green markets	/	2.131
Total	**73**	**4.010**

However, as there are no other official data to compare, this cannot be regarded as sufficient to conclude whether the trends in the food waste are increasing or diminishing.

3.2. Waste Management

Waste management generally shows slow but positive developments, yet with significant room for improvement for recycling across the key waste streams.

About **recycling rates of municipal waste,** they are still very low. The dominant way in the management of collected municipal and other types of non-hazardous waste is the disposal, i.e. landfilling of the waste at legal landfills According to the data of the State Statistical Office, the total amount of **collected municipal waste** in the Republic of Macedonia in 2017 was 635,875 tones. Compared to 2016, the total amount of collected municipal waste increased by 4.2 %.[23] Segregated by type, it gives a better picture when comparing what type of municipal (recyclable) waste is collected and to what extent is recycled, and how much of it is lost in the chain of managing the waste.

Table: Waste collected in 2017 by type

Waste (by type)	Amount of collected municipal waste in 2017 (in tones)
Republic of Macedonia – total	**635 875**
Paper	8 740

[23] State Statistical Office, News Release No, 9.1.18.01 from 20.04.2018

Glass	2 208
Plastic	9 262
Metal (iron, steel, aluminium)	1 949
Organic waste (food, leaves, etc)	38 411
Textile	8 181
Rubber	1 007
Mixed municipal waste	554 280
Other	11 838

In relation to the total transported municipal and other non-hazardous waste in 2017, only 0.87% was reported as processed (composted waste, recycled paper, cardboard, glass, plastic and metal), which again shows tendency of increase compared to 0.28% in 2013.

The **recycling rates for packaging waste** are showing tendency of increase**.** Pursuant to the Law on Packaging and Packaging Waste Management ("Official Gazette of the Republic of Macedonia" No. 161/09), Article 35, the national targets for handling packaging waste are that on the territory of the Republic of Macedonia the following quantities of packaging and waste of packages should be collected and processed within the following time limit:

- by the end of 2020, a minimum 60% of the weight of packaging waste generated on the territory of the Republic of Macedonia should be reworked with renewal operations or with energy processing operations;

- by the end of 2020, a minimum of 55%, and a maximum of 80% of the weight of the packaging waste generated on the territory of the Republic of Macedonia should be recycled;

- by the end of 2020, the following quantities of materials from which packaging is produced should be recycled:

- 60% glass,

- 60% paper and cardboard,

- 50% of metals and

- 15% wood,

- 22.5% plastic by the end of 2018, taking into account only recyclable materials in plastic.

Table: Total collected quantity and recycled or processed packaging waste for 2016

Quantity of packaging released on the market (t)	Quantity collected (t)	Total recycled packaging waste (t)	Total recycled or processed packaging waste (t)
59.243,76	23.834,97	23.381.85	23.791,51

For 2016, the recycling rate of packaging waste was 39.47% (compared to 18.8% in 2013), while the rate of recovery or burning in waste incineration plants with renewable energy is 40.16%. As it can be

seen from the abovestated data, the total recycling percentage aims to achieve the objectives envisaged by law.

The **recycling** of municipal **bio waste** is negligible, (around 0.3% in 2017)

As for the **waste electrical and electronic equipment** (WEEE), the estimated generated quantity is around 15.000 tones per year[24]. The country lacks recycling facilities for electrical and electronic equipment.

Concerning **construction and demolition waste,** there are no accurate sources of data on the total amount of construction and demolition waste produced in Macedonia, and even less, how much of it is recycled. In the National Waste Management Plan 2009-2015 (published in 2008) the following is stated regarding the generated construction waste:

"The annual production of construction waste stream depends to a large extent on construction activities in the public and private sectors. Estimated quantities for Macedonia are based on experiences from other countries and it is estimated that around 230-250 kg / per capita / per year is generated; for Macedonia, the average annual amount of generated construction waste is estimated at between 460,000 and 500,000 tones / per year. "[25]

Recent various regional studies have come to a conclusion that this is a low estimate compared to the amount created in the new EU member states. If we consider the latest data only for the number of newly issued building permits (in building, civil engineering and reconstruction) in the period 2015-2017[26], the amount of generated construction waste is certainly far greater.

Table: Number of issued building permits, 2015-2017

Year	Total	Buildings	Civil Engineering	Reconstruction
2015	3 143	1 938	454	751
2016	3 377	2 076	413	888
2017	3 390	2 132	372	886

For the **recycling of waste batteries and accumulators[27],** in the period of 2011-2015, the amount of collected, treated, and recycled waste of batteries and accumulators (WBA) showed tendency of increasing. In the same period the amount of batteries and accumulators (BA) released on the market has constantly increased. In 2015, the amount of BA released on the market increased by 78% compared to 2011.

In accordance to the annual reports submitted to the Ministry of Environment and Physical Planning, data and information on the treatment of waste batteries and accumulators are provided by legal persons possessing permits for treatment of waste batteries and accumulators, small-scale producers, legal and natural persons possessing permits for independent treatment of waste batteries and accumulators.

[24] Elkolekt, company licensed for managing waste of electrical and electronic equipment ,http://www.elkolekt.mk/medium32.html

[25] Ministry of Environment and Physical Planning, National Waste Management Plan of the Republic of Macedonia (2009 - 2015), www.moepp.gov.mk/wp-content/uploads/2014/12/NWMP_2009-2015_-of-RM_finaL.pdf

[26] Macedonia in Figures, pp 48, http://www.stat.gov.mk/Publikacii/MakBrojki2018_mk.pdf

[27] Environment Statistics 2017, pp. 61, http://www.stat.gov.mk/Publikacii/ZivotnaSredina2017.pdf

3.3. Secondary raw materials

The contribution of recycled materials to overall materials demand is relatively low. Trade in secondary raw materials is increasing

The contribution of recycled materials to satisfying the demand for raw materials is still small to negligible. In the Republic of Macedonia, there are recycling facilities for plastic, paper, iron and steel, non-ferrous metals, and accumulators. However, the country lacks recycling facilities for glass, batteries, and electrical and electronic equipment.

According to the State Statistical Office, country external trade (import and export) in waste for the period 2011-2015 shows a tendency of increasing of export, and decreasing of import.

Table: Waste import and export, 2011-2015

Year / tons	2011	2012	2013	2014	2015
Total import	66 287	53 108	54 429	69 731	51 852
Total export	46 677	54 461	58 280	68 405	51 215

In 2015 the ratio between import and export of waste (according to divisions of the Classification of Products by Activity, CPA 2008) is 50.31% to 49.69%

3.4. Competitiveness and innovation

There is no available segregated data on the private investments in economic sectors relevant to the circular economy (reuse and recycling), nor how many jobs or added value comes from this sector, because the current statistics does not distinguish those activities that clearly contribute to circular economy from those that do not.

The transition towards greater circularity in the country economy is foreseen in a number of national strategic documents, the latest being the Draft Industrial Strategy with a focus on Manufacturing[28], since as noted "this is critical to growth, productivity, high quality jobs, innovation, export, circular economy".

Concerning innovation, the latest indicators of the European Innovative Ranking List (2018)[29] still categorize the Republic of Macedonia as a "modest innovator" compared to other European countries. This ranking stems from poor performance (below the EU average) in relation to several key indicators, although there is a steady progress in relative performance, by 12.2% between 2010 and 2017, compared to EU in 2010, and 9.6% between 2010 and 2017, compared to EU in 2017 .

As noted in the country profile list, "attractive research systems and innovators are the strongest innovation dimensions, while sale impacts and intellectual assets are the weakest innovation dimensions".

4. Concluding notes

"Circular economy" is yet to explicitly enter in the national legal framework through the new Law on Waste Management and the Draft Industrial Strategy with a focus on Manufacturing. However, as a concept it does exist, especially concerning the re-use of secondary row materials (iron, steel, paper, and lately, also plastic).

Enabling legal environment will be needed for companies to seriously consider circular economy. Green public procurements and support of innovations that have recycling, re-use and prolonged life of goods

[28] https://konkurentnost.mk/wp-content/uploads/2018/06/IndustryStrategy17MayCLEAN.pdf

[29] EIS, Country profiles https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

and services in focus, are paramount for more significant investments by the economic actors in smart innovative and sustainable growth, .modernisation and patents.

Quality data generation (and availability) is prerequisite for designing evidence-based strategies and for further monitoring of the progress in any sector, including the developments in the sectors that are fundamental for the circular economy. Setting a national monitoring framework with indicators and a baseline will provide for following the progress and developments of circularity of resources and services in the economy, but also for assessing the social and environmental effects because of these actions.

Cases of practicing circularity of recyclable materials and services in the chain of economic activities (production and consumption) are present and attract business and public attention; yet they are not visible enough to trigger bigger impact, like in creating jobs and adding value.

Finally, the role of information provision, awareness raising, education, training and capacity building on the concept of circular economy should not be underestimated. The fact is that Macedonian companies and other relevant stakeholders (business community, citizens) are still relatively uninformed of the potential benefits of the circular economy concept. It is essential for the government and other concerned parties to be engaged and to systematically address this gap in the coming years though a structured approach and plan.

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