

Croatia Circular Economy Approaches in Solid Waste Management (P173141)

ACTIVITY 1.1: Diagnostic analysis for a Circular Economy in Croatia

TASK 2: Comparative analyses on resource circulation of Slovenia and Croatia

(Annex 2)



Disclaimer

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This Report was prepared by the core team from the World Bank led by Wolfhart POHL (Lead Specialist, Environment and Geosciences, Task Team Leader) and Sameer AKBAR (Senior Environmental Specialist, co-Task Team Leader), Vladimir KALINSKI (Project Coordinator), Rieko KUBOTA (Senior Environmental Engineer), Jiyoun Christina CHANG (Environmental Specialist), Irena RELIĆ, Natalija GOLUBOVAC (Waste Management Experts), and Marko BALENOVIC (Program Assistant).

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Abbreviations

%	per cent
CCIS	The Chamber of Commerce and Industry of Slovenia
CE	Circular Economy
CMR	Circular Material Use
CRM	Critical Raw Materials
EC	European
EIT	European Institute of Innovation and Technology
EMAS	Eco management and Audit Scheme
EU	European Union
GDP	Gross Domestic Product
GoS	Government of Slovenia
GPP	Green Public Procurement
JRC	Joint Research Centre
km²	Square kilometre
LSGU	Local Self Government Units
MINGOR/MoESD	Ministry of Economy and Sustainable Development
MSW	Municipal Solid Waste
NGO	Non-Governmental Organisation
OG	Official Gazette
PPP	Public-private partnerships
R&D	Research and Development
SDG	Strategic Development Goals
VAT	Value added tax

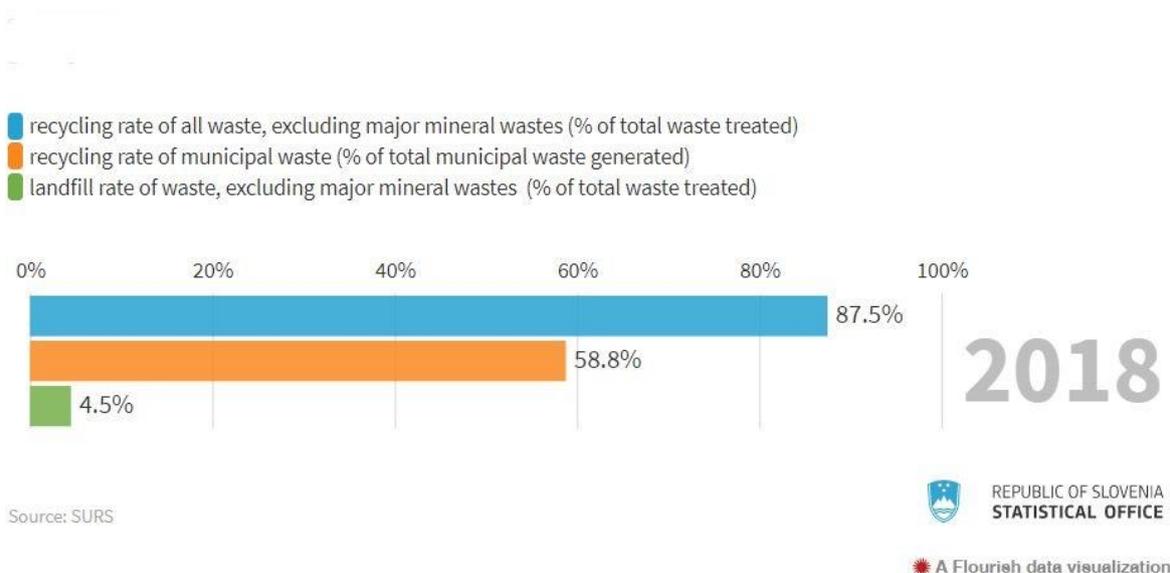
Executive summary

Slovenia is a good role model for Croatia. Being 10 years longer in the EU than Croatia, it has developed an advanced circular economy policy framework and it is achieving good results in transition to Circular Economy.

This report focuses on the presentation of the strategic documents of the Slovenian Government highlighting CE aspects in their cross cutting nature, on good initiatives and concrete implementation projects and on comparing the overall performance between Croatia and Slovenia in the field of CE.

Table1: Waste indicators 2010-2018 (SLO)

Some waste indicators, Slovenia, 2010–2018



According to the EC's Environmental Performance Review for Slovenia¹ (2019), Slovenia is well advanced in the CE sector. Slovenia has put in place a solid circular economy framework with advanced national policies and contributions from local and regional authorities. **Circular Economy is one of Slovenia's strategic development priorities.** Slovenia municipal waste recycling rates are above the EU average; with the 59,2% recycling rate is second in the EU. Slovenia is a forerunner regarding improvement of separate collection and increasing recycling rates in a relatively short time, by putting in place economic instruments such as landfill tax, reduced VAT (9.5%)² on minor repairs of bicycles, clothes and household linen, shoes and leather goods as well as awareness raising campaigns and advanced separate collection system. Good results in waste management are due to change in waste management policies, moving from a nearly all-landfilling to a dominantly recycling society. Slovenia transition towards a circular economy is successful also thanks to a significant contribution from local and regional authorities. E.g., the city of Ljubljana with recycling rates nearing 70% and a Zero Waste Strategy in place is leading Europe's transition to a circular economy. The state bodies play a key role in eco-innovation by promoting long-term collaboration in the form of research and innovation

¹ https://ec.europa.eu/environment/eir/pdf/report_si_en.pdf

² <https://www.avalara.com/vatlive/en/country-guides/europe/slovenia/slovenian-vat-rates.html>

partnership (SRIPs). Slovenia is one of the few Member States (MS) that have mandatory Green Public Procurement (GPP), in some examples, such as the city of Ljubljana, the city's green purchases represent more than 70% of all the city's investment.

Also, Slovenia has one of the highest environmental tax revenues in GDP across the EU. In line with this philosophy, the government has signed and is currently implementing several international and national plans towards the transition to a circular economy. The most recent document is the Road Map for Circular Economy (2018), which is closely tied to the Sustainable Development Goals and it is included in important documents such as "A vision for Slovenia in 2050" and "Slovenia Development Strategy", and the "Slovenia Smart Specialisation Strategy". Local and regional authorities have contributed significantly to the CE policies. Several of Slovenia's good practices are shown on the European circular economy stakeholder platform's website. Examples include Ljubljana's project turning invasive plants into a recycled paper; or the Econyl project collecting and reprocessing used nylons, mainly from the fishing industry, into an innovative ecological material – 'econyl'.

1. General facts about Slovenia

Table 2: General Information about Slovenia

Surface area (km ²): 20.273
Population: 2.081 million (2019)
Population density: 101 inhabitants/km ²
Average number of persons per private household: 2.46
Percentage living in rural areas: 45.18% / living in urban areas: 54.82%
Composition of GDP: \$54.17 billion (nominal, 2019)
GDP per capita: \$ 25,946.18 (2019)
GDP by sector: agriculture: 1.98%, industry: 28.4%, services: 56.87%

2. Introduction

The aim of Task 2 - Comparative analyses on resource circulation of Slovenia and Croatia of the project is to identify a comparable country, (one with similar socio-geographic and economic characteristics, but with more advanced circularity policies) and conduct a comparative analysis on resource circulation with Croatia.

In consultation with the World Bank and the Croatian Ministry of Economy and Sustainable Development, Slovenia was chosen as country for comparison. The selection was based on the similarities of the two countries: both are small countries in size with small population with a similar political, historical, institutional framework and are also neighbouring countries. Being both post-communist countries and being in common historical state communities both countries entered EU and are shifting their economies in line with EU policies and toward circular economy.

As will be shown in the report the current status of circularity of the economies of the two countries is quite different. As an example, the percentage of unseparated or insufficiently separated household waste is much higher in Croatia. From a governance perspective there is one key difference: while Circular Economy in Croatia is mainly understood as a task of the Ministry of Economy and Sustainable Development in Slovenia it is understood as a governmental task including the Prime Minister's office and all line Ministries. Hence in Slovenia initiatives have been taken which are backed up by all Ministries, such as mandatory Green Public Procurement. Furthermore, in Slovenia Circular Economy is already reflected in a number of strategic documents, such as the Industrial Development Strategy, while in Croatia most strategic documents currently in force do not reflect the philosophy of Circular Economy yet. However, it should be mentioned that Croatia is in the process of updating or renewing a number of strategic documents and is planning to include the topic of Circular Economy. Besides reflection of the CE approach in governmental strategies gaining of practical experience through application of the CE philosophy in specific value chains is of key importance. Both Croatia and Slovenia have gained quite some experience through research projects and/or EU funded regional development projects.

3. Methodology

The consultant has collected all available material relevant for the topic using desk research. The consultant has compared policy, regulatory and institutional framework as well as operational regimes, including regulatory and licensing environments. The institutional framework (set of ministries, regional and local authorities in charge, both in the fields of waste management and in the fields of product policy/eco-innovation and for public procurement) have been assessed and compared to Croatia. Also the role of the business community, including chamber of commerce and similar sector organizations, have been mapped. Last but not least, the overall framework for boosting eco-innovation in both countries were analysed. Existing incentives and market mechanism are highlighted in the report.

4. Circular Economy Indicators: Croatia compared to Slovenia

The monitoring framework on the circular economy as set up by the European Commission consists of ten indicators which are divided in following sections:

- Production and consumption;
- Waste management;
- Secondary raw materials;
- Competitiveness and innovation.

Targets have been set for collection and/or recycling/recovery of different waste categories (packaging waste, tyres, ELVs, WEEE, waste oils, etc.), in accordance with EU directives.

Table 3-5: CE indicators – Slovenia and Croatia comparison

Generation of waste	Croatia	Slovenia
Generation of municipal waste per capita (kg/capita)	445 (2019)	509 (2019)
Generation of waste excluding major mineral wastes per GDP unit (kg per thousand Euro)	77 (2018)	73 (2019)
Generation of waste excluding major mineral wastes per domestic material consumption (in %)	8.8 (2018)	11.1 (2019)
Food waste (thousand tons)	399 (2017) ³	141 (2019)

Waste Management	Croatia	Slovenia	EU Targets
Recycling rate of municipal waste (%)	30.2 (2019)	59.2 (2019)	50%- 2020 55% - 2025 60% - 2030 65% -2035
Recycling rate of all waste excluding major mineral waste (%)	52 (2016)	84.5 (2019)	

Bio-waste	Croatia	Slovenia	EU Targets achieved
Recycling of bio-waste (kg per capita)	15 (2019)	84.2 (2019)	87 (2019)

Recycling of special waste streams:

Packaging and packaging waste	Croatia	Slovenia	EU Targets		
			2020	2025	2030
Recycling rates of overall packaging waste (in %)	58.4 (2018)	69.7 (2018)	55	65	70
Plastic packaging (in %)	37.3 (2018)	50.5 (2018)	25	50	55
Paper and cardboard packaging (in %)	93.7 (2018)	84.2 (2018)	60	75	85
Wooden packaging (in %)	3.8 (2018)	27 (2018)	15	25	30
Metallic packaging (in %)	20.5 (2018)	71.1 (2017)	50	70	80
Aluminium (in %)			50	60	
Glass packaging (in %)	60.5 (2018)	98.5 (2017)	60	70	75

E-waste	Croatia	Slovenia	EU Targets
Recycling rate of e-waste (%)	83.4 (2019)	34.8 (2018)	From 2019:

³[http://www.hoop.hr/sites/default/files/uploads/dokumenti/021_otpad/Projekti/SC18-313%20Biootpad%20i%20otpad%20od%20hrane%20-%20rezultat%201%20FINAL%20ZA%20WEB%20\(bez%20podataka%20MP%20i%20PRILOGA\)_rev.pdf](http://www.hoop.hr/sites/default/files/uploads/dokumenti/021_otpad/Projekti/SC18-313%20Biootpad%20i%20otpad%20od%20hrane%20-%20rezultat%201%20FINAL%20ZA%20WEB%20(bez%20podataka%20MP%20i%20PRILOGA)_rev.pdf)

			65% of EEE placed on the market in the three preceding years or 85% of WEEE generated on their territory
Construction and demolition waste	Croatia	Slovenia	EU Targets
Recovery rate (in %)	67 (2019)	98 (2019)	70% – 2020
Landfill rate	Croatia	Slovenia	EU Targets
Landfill rate of waste excluding major mineral wastes (in %)	59 (2019) ⁴	5 (2018)	no more than 10% of municipal waste would be deposited in a landfill - 2035

End-of-life vehicle (2018)	Croatia	Slovenia	EU Targets achieved
Reuse/recovery	97.7	91	92.9
Reuse/recycling	97.4	85.9	87.3

Batteries and accumulators (2017)	Croatia	Slovenia	EU Targets achieved
Collected for recycling	96	35	48

Secondary raw materials

Circular material use rate or circularity rate	Croatia	Slovenia	EU level
(in %) ⁵	5.2 (2019)	11.4 (2019)	11.8 (2019)

Competitiveness and innovation

Private investment, jobs and gross value added related to CE sector	Croatia	Slovenia
Gross investment in tangible goods (<i>percentage of gross domestic product (GDP) at current prices</i>)	0.18 (2018)	0.16 (2019)
Persons employed (<i>percentage of total employment</i>)	2.5 (2018)	2.02 (2018)
Value added at factor cost (<i>percentage of gross domestic product (GDP) at current prices</i>)	1.56 (2018)	1.26 (2019)
Number of patents related to recycling and secondary raw materials	3.5 (2008-2016)	6.45 (2008-2016)

⁴ http://www.haop.hr/sites/default/files/uploads/dokumenti/021_otpad/Izvesca/Kratki%20pregled%20KO%202019.pdf

⁵ The circular material use rate (CMR) or circularity rate measures the share of material recovered and fed back into the economy in overall material use, thus it measures the contribution of recycled materials towards the overall use of materials.

Comparison of municipal waste by treatment type

Table 6: Municipal waste by treatment type comparison between Croatia and Slovenia

Figure 5: Municipal waste by treatment in Croatia, 2010-2017¹⁶

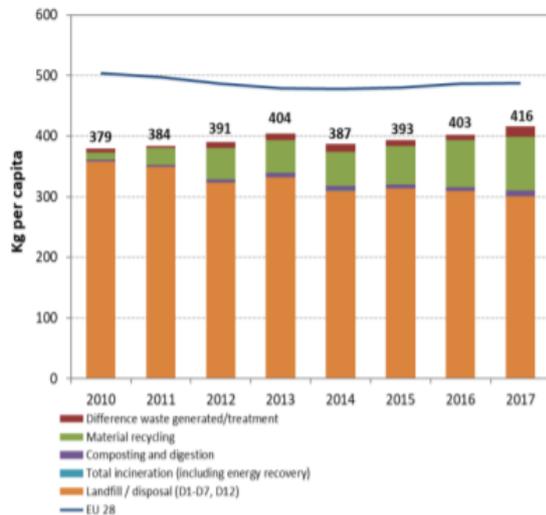
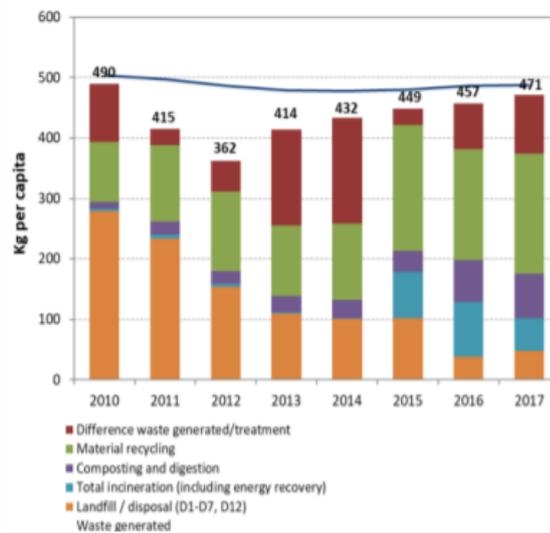


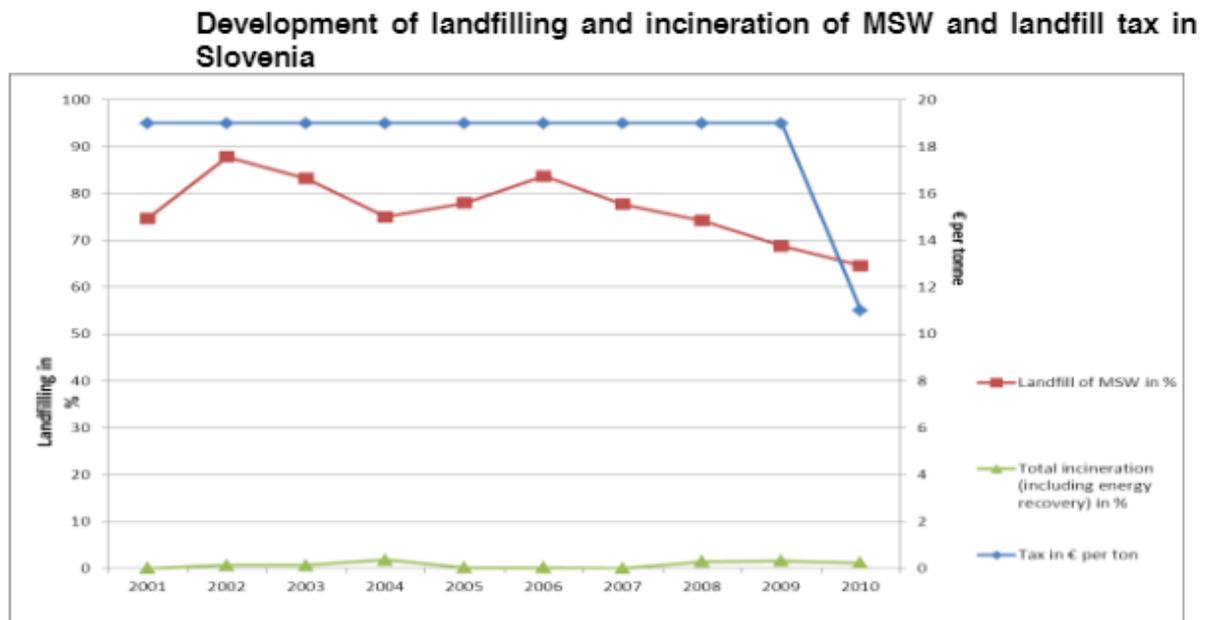
Figure 5: Municipal waste by treatment in Slovenia 2010-2017³⁰



Source: EU EIR 2019

We might ask ourselves how Slovenia achieved such a low level of waste landfilling and such a high level of recycling in such a short time. One of the reasons might be waste management financial instruments such as the introduction of the landfill tax. The Slovenian landfill tax was introduced in 2001, when the Decree on environmental tax for environmental pollution caused by waste disposal was adopted. All landfill operators of landfills for hazardous, non-hazardous and inert waste are obliged to pay tax for the disposal of waste. The rate of the landfill tax in the period from 2001 to 2009 was 19 EUR/t. However, this was the maximum tax rate, and the average tax paid is estimated to have been around 7-10 EUR/t. In 2010, the rate was changed to 11 EUR/t.

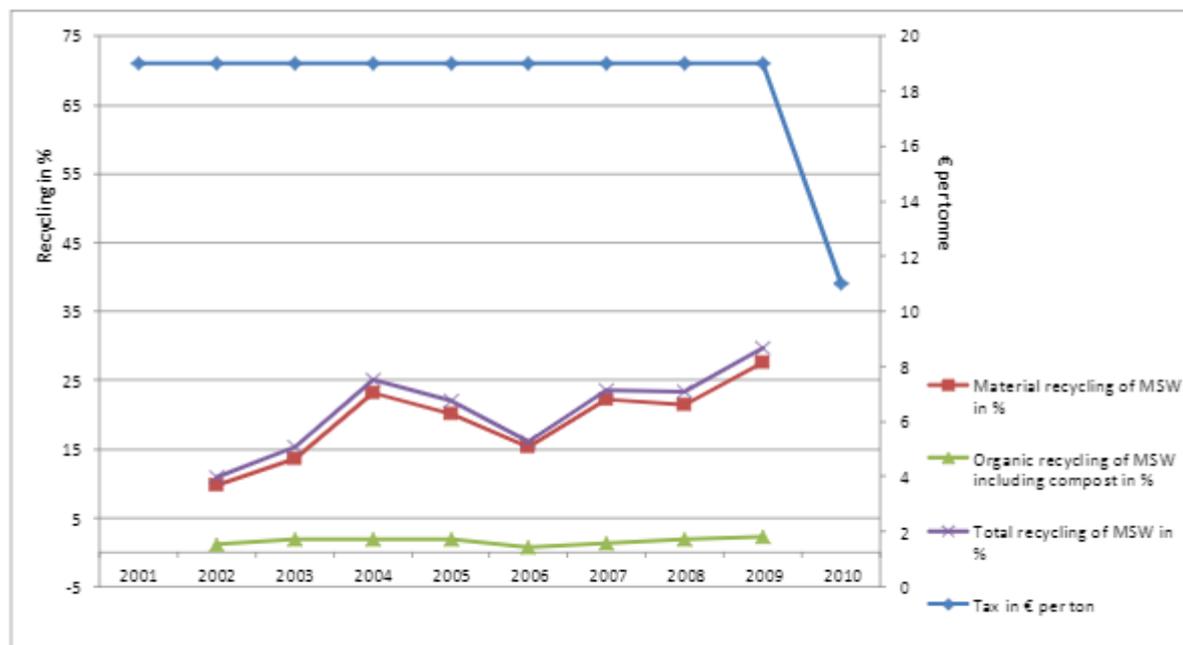
Table 7: development of landfilling and landfill tax in Slovenia



Source: ETC/SCP, 2012 and Eurostat, 2012

We can see that the percentage of landfilled MSW has started to decrease constantly since 2006, and the landfill tax might have contributed to this development.

Table 8: development of recycling and landfill tax in Slovenia



Source: ETC/SCP, 2012 and Eurostat, 2012

Also, there was an increase of recycling since the landfill tax was introduced in 2001. The revenues from the landfill tax are mainly earmarked for investments in waste management centres.

Table 9: recycling rate trend in Slovenia

Recycling rate of municipal waste in Slovenia from 2009 to 2017

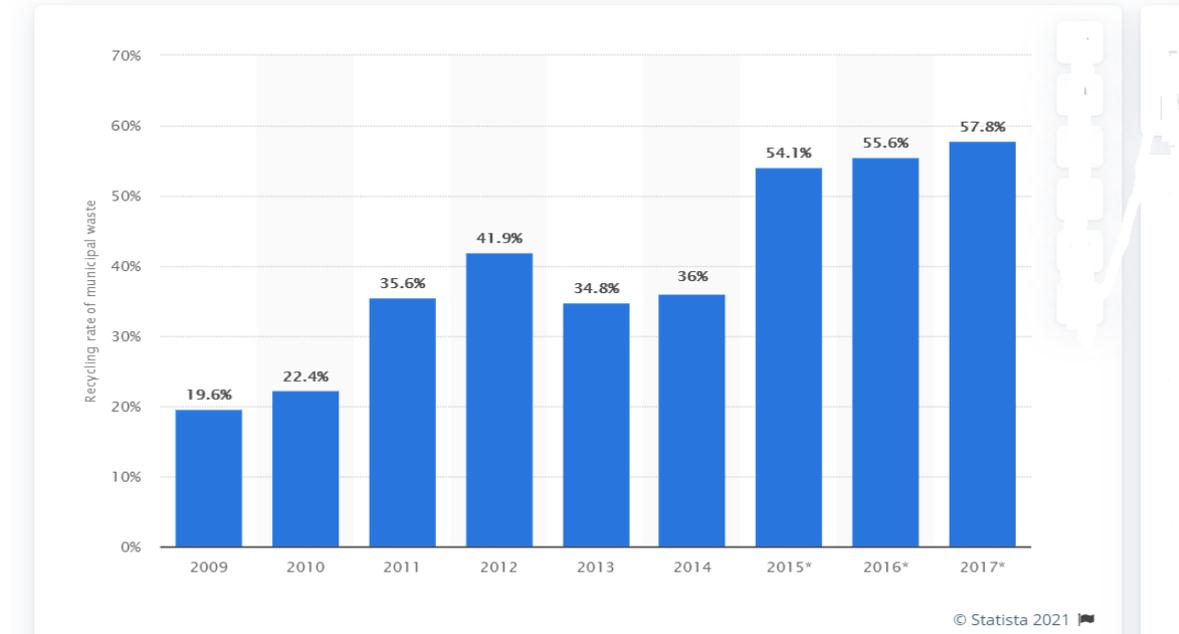


Table 10: landfilling rate trend in Slovenia

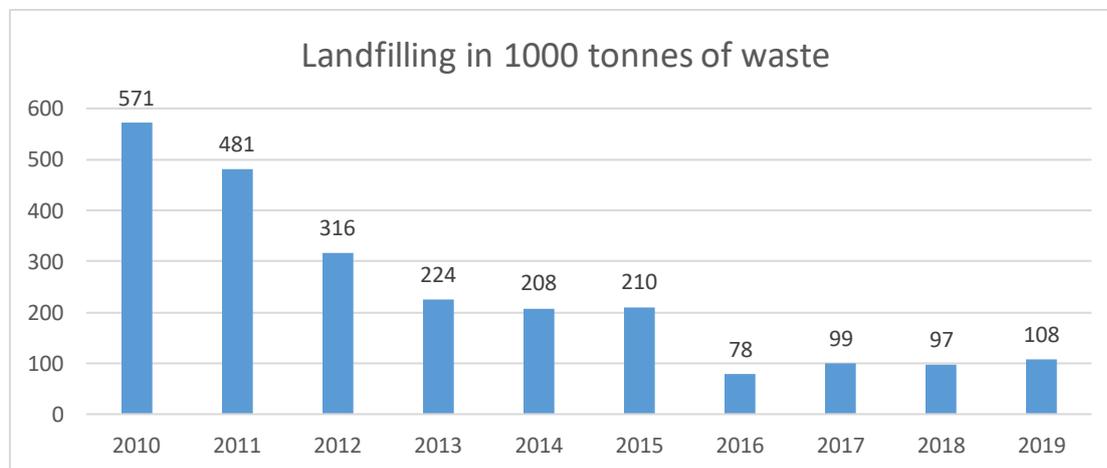


Table 11: bio-waste recycling rate trend in Slovenia

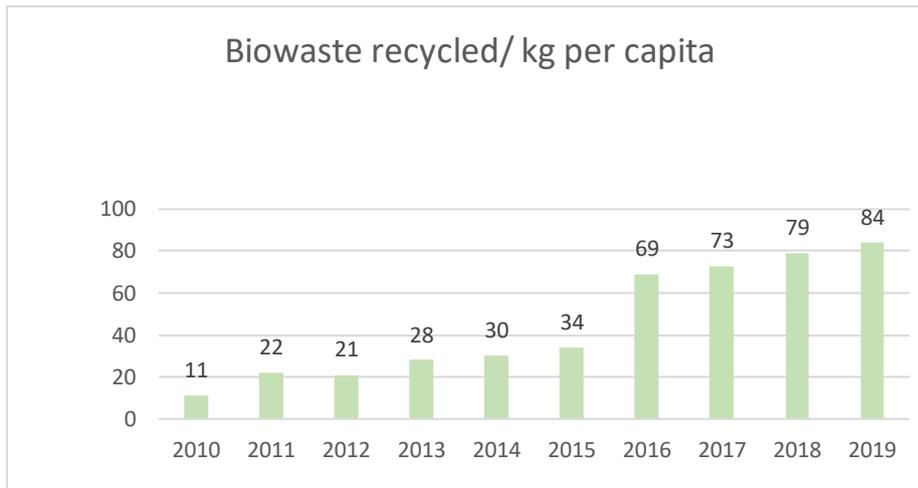
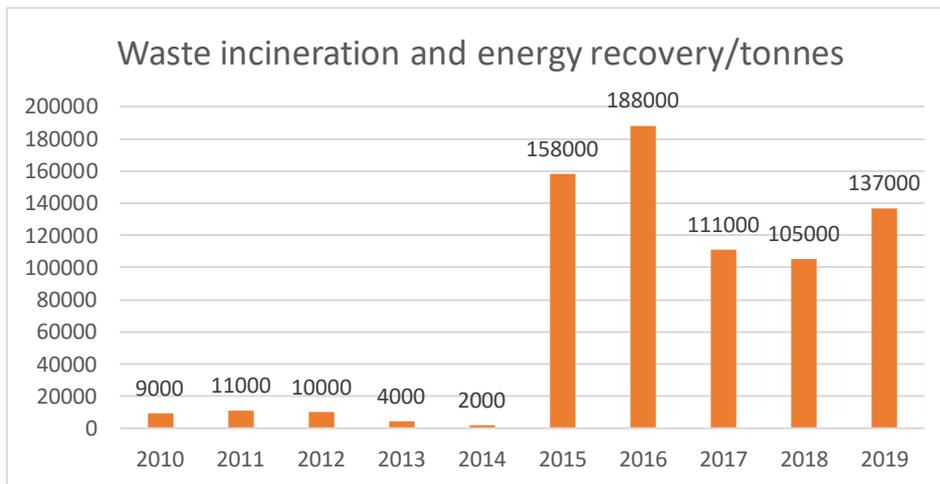


Table 12: waste incineration and energy recovery rate trend in Slovenia



Source: Eurostat adapted data

Slovenia has lowered its landfilling rate by setting up efficient separate municipal waste collection, building waste management infrastructure such as regional centres for waste management as well as setting up efficient a bio-waste treatment system. From 2015 onwards, when waste management centres were established, there is a significant increase in waste incineration rate but also a higher bio-waste recycling rate. Slovenian recycling rate was moderate until the mentioned waste management infrastructure was built. We might conclude that currently recycling has its limits and further landfilling rate is being lowered by waste incineration.

5. Overview of Slovenian Circular Economy policies: The “Roadmap towards Circular Economy in Slovenia” and further relevant strategic documents

In this section of the report the wide range of Slovenian national strategies, which contain elements of establishing Circular Economy approaches in Slovenia are briefly presented.

Table 13: Summary of strategic documents, in chronological order

Strategic document	Status (chronological)
Framework Program for the Transition to a Green Economy with the Action Plan	Adopted in 2015. Does not exist in Croatia.
Smart Specialisation Strategy	A platform for focusing development investments, adopted in 2015.
Waste management program and waste prevention program from 2020 till 2030	Adopted in 2016.
Strategic Development Innovation Partnership (SRIP) - Action plan for the Transition to a Circular Economy	Adopted in 2017. Does not exist in Croatia.
Slovenia's development strategy until 2030	Adopted in 2017.
Roadmap towards Circular Economy in Slovenia	National Circular Economy Strategy adopted 2018. Does not exist in Croatia.
Agenda for Sustainable Development By 2030	Adopted in 2020.
Comprehensive National Energy and Climate Plan of the Republic of Slovenia	Adopted in 2020.
Resolution: "Our food, countryside and natural resources after 2021" – Strategic Framework for the Development of Slovenian Agriculture	Basic strategic framework for the operation of agriculture, food and rural areas and is the basis for new strategic planning for the period after 2021. Adopted in 2020.
Slovenian Industrial Strategy 2021-2030	Will be adopted in 2021, currently the draft is in public discussion.

Roadmap towards Circular Economy in Slovenia

The 2018 “Roadmap towards Circular Economy in Slovenia”⁶ sets the path for Slovenia to become one of the region’s leaders in the circular economy. The Roadmap represents a process of identification and collection of a wide array of circular practices and initiatives, allowing to map out activities that should be directed by the Government and carried out by the stakeholders.

CREATING THE ROADMAP

The Roadmap was commissioned by the Ministry of the Environment and Spatial Planning. **The process of preparing the document was under the patronage of the Partnership for the Green Economy of Slovenia. The consortium of document authors was led by the Circular Change NGO platform.**

The Government played a crucial role by taking concrete and effective cross-sectoral measures to support the key points that represent the potential for a Circular Slovenia on local, regional and national levels. The involvement of multiple stakeholders with the goal of facilitating the transition from a linear to a circular economy has been going on since 2016, starting with the Partnership for Slovenia's Green Economy project, taking place under the patronage of the Prime Minister uniting over 3 000 partners. Regional consultations and meetings with stakeholders have helped to collect the core information for the creation of the Roadmap. During the first stage, twelve regional consultations were conducted. Consultations took a bottom up approach in order to identify and evaluate the potentials of each of the regions, both within the framework of natural resources and economic activities, knowledge and good practices, in order to identify four priority areas of Slovenia's circular transition.

In concrete figures the Government:

- Listed almost 100 good practices from all over Slovenia;
- Conducted 19 structured interviews with key stakeholders from government departments, the economy, interest groups and experts from individual fields;
- Stimulated 3 000 stakeholders to take part – communication within the framework of the Partnership for Green Economy and the electronic newsletter;
- Presented the Roadmap at various events in 9 European countries – i.e. Austria, Spain, the Netherlands, Belgium, Greece, Switzerland, France, Serbia, Slovakia;
- Presented the process of drawing up the Roadmap at more than 15 different events in Slovenia;
- Regularly informed the public on the progress of the project on websites, social networks and the Partnership for Green Economy.

Furthermore, an interdepartmental group of the Partnership for Green Economy of Slovenia was set up and is led by the Prime Minister office. It includes members from the Ministry of the Environment and Spatial Planning, the Ministry of Finance, the Ministry of Education, Science and Sport, the Ministry of Public Administration, the Ministry of Infrastructure, the Ministry of Agriculture, Forestry and Food, the Ministry of Labour, Family, Social Affairs and Equal Opportunities and Government Office for Development and European Cohesion Policy. Hence, very broad inclusion of Ministries and public bodies is ensured which should contribute to creating broad ownership of the Roadmap.

The interdepartmental group was later expanded to **the Partnership for the Green Economy of Slovenia** in Slovenia which leads and supports the process of transition to a circular economy and also

⁶ https://circulareconomy.europa.eu/platform/sites/default/files/roadmap_towards_the_circular_economy_in_slovenia.pdf

operates internationally. The group was set up by the Government of the Republic of Slovenia in 2015 with the aim of promoting and monitoring the transition to a green and circular economy. The Partnership operates within the Cabinet of the Prime Minister of the Republic of Slovenia. It is coordinated by the Government of the Republic of Slovenia with the support of the Ministry of the Environment and Spatial Planning. The Partnership consist of an interdepartmental group of the Partnership for Green Economy as well as representatives of business community, municipalities, experts, other key institutions and NGOs. The Partnership connects experts, businessmen and local communities, non-governmental organizations and investors who want to actively participate and contribute to the co-creation of solutions and other activities for the transition to the green economy.

Inside the Partnership, the tasks of the Government are to connect policies, improve the legislative framework, to provide guideline and support and to provide implementation through financial mechanisms.

The task of the partners in the Partnership are the transfer of experience and knowledge, providing examples of good practice and implementation of CE principles.

The Roadmap is seen as a "living system", which is upgraded, updated, and adapted over time. In its explanatory part the following is stated: "It is a process based on the integration of the broadest pool of stakeholders and the recognition of existing good practices, initiatives, as well as the obstacles that are detected in the transition to a circular economy. The Roadmap can serve to shed light on certain aspects of the continued research and realization of Slovenia's Strategic Goals and the formulation of an action plan for the circular transition."

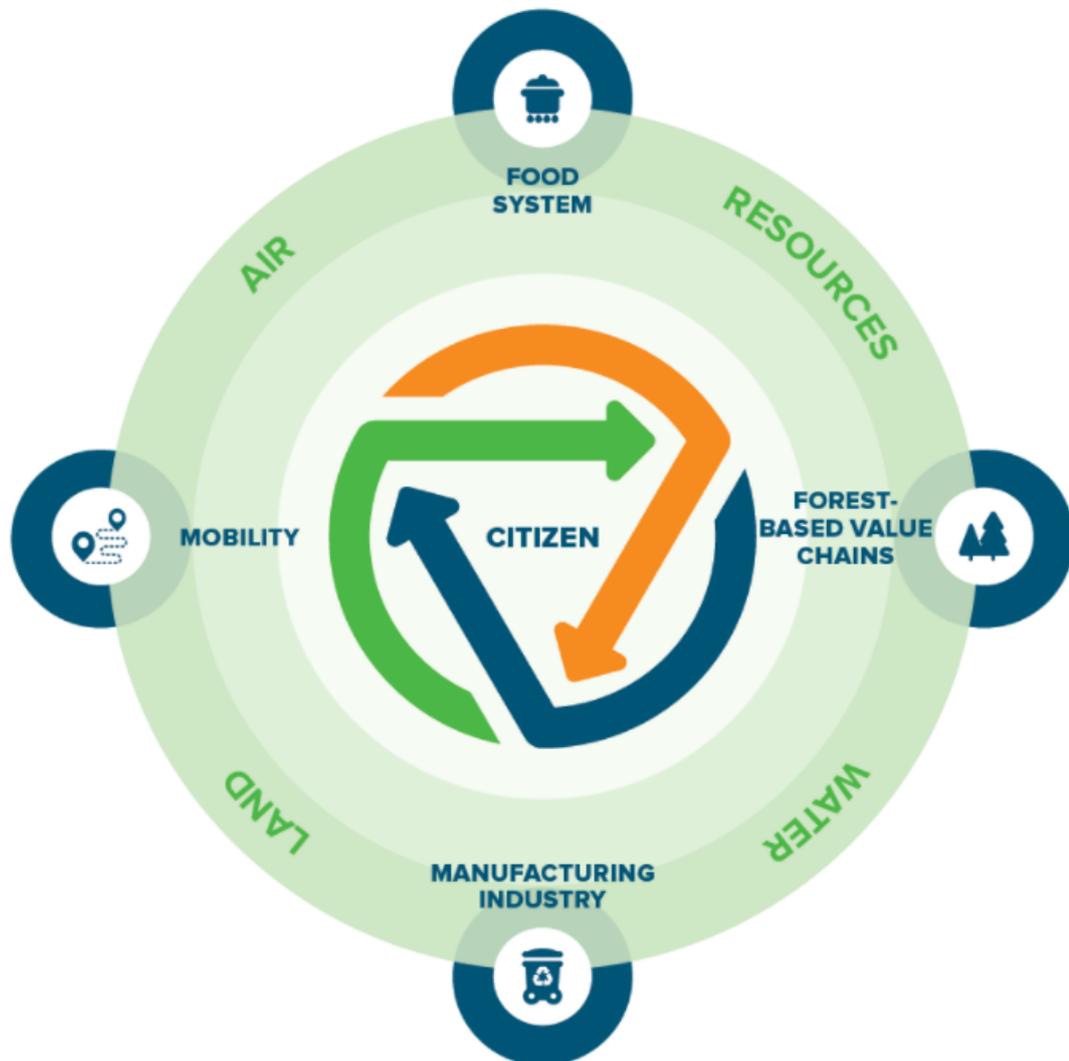
The goals of the Roadmap are defined as follows:

- a. Outline the potentials that establish Slovenia as the leader of the transition into the Circular Economy in Central and Eastern Europe;
- b. Involve stakeholders to identify and connect circular practices;
- c. Create recommendations for the Government of the Republic of Slovenia to facilitate a more efficient transition; and
- d. Identify circular opportunities for the strengthening of international economic competitiveness and quality of life for all.

To visualize the process, the Roadmap presents the Circular Triangle model.

Table 14: Circular Triangle model

The Roadmap presents four priority fields for Slovenia:



The triangle outlines three interconnected fields that together create the condition for a systemic Circular Transition. Each of the fundamentals has a core that serves as the main stimulus for change:

- **Circular Economy: companies as the core** – from linear to circular business models/companies;
- **Circular Change: public sector as the core** – comprehensive policies to support the transition/public sector;
- **Circular Culture: citizens as the core** – a reflection on values and new narrative/citizens.

The roadmap aims to involve stakeholders in identifying and connecting practices that are compatible with the circular economy and in producing recommendations for the government to help the transition.

Circular Economy – companies as the core

The transition from linear to circular models in companies can take many forms, such as:

- Circular (Eco) Design – designing products in a modular way, facilitating repairs, maintenance, modifications, restoration, dismantling, recycling, etc.;
- Transitioning from products to services – the consumer becomes a user and pays for a service, while the ownership of the product remains with the manufacturer, enabling them to focus on more durable, longer-lasting products at a higher cost, with a longer life and designed according to the principles of circular design, so that the materials used can be employed as efficiently as possible, reducing the material costs and price risks;
- Industrial symbiosis – various stakeholders exchange between one another materials/raw materials that were once declared to be waste. This means that the amount of waste decreases, while the practical value of the materials increases;
- Closing energy loops – the energy surplus of one economic subject can be used as energy input by another, or perhaps it can be advantageously used within the same company. In this way, the effectiveness of energy use is greatly increased, the costs go down and the negative effects on the environment are decreased.

The Roadmap uses a classification method that places the models in one of three categories:

- those that reduce the consumption of resources;
- those that focus on value retention; and
- those that change consumption patterns.

Table 15: Business models in circular economy

Changing patterns of consumption	Shift in consumption patterns	New ways of consuming, abandoning old consumption patterns thanks to digitalization, cultural changes, changes in the system of value, etc.
	Sharing models	Improving the effectiveness of product use, the products "circulate" between the users with the aid of technologies such as social networks.
	Products as services	Various approaches that bring the product to the user as a service, but not as an owned good: leases, time-sharing, joint ownership, etc.
Retention of material and product value	Processing, restoration and reusing products and components	Activities that guarantee that the product does not end on the scrap heap, but instead it lives on with a minimal drop in value, or, if possible, even an increase (upcycling).
	Extending the product's life	The products are designed to last longer and/or are easy to repair/reuse/modify
Reduced use of primary sources	Using renewable energy sources	Substituting fossil fuels with renewable energy sources
	Effective use of resources	Maximizing effectiveness by means of technical improvements, better business models, product designs, etc.
	Recycling	Using surplus materials in manufacturing processes that create new products/materials

Circular Change – Public Sector as the Core

It is a matter of interdependence between the various sectors, which is why the circular transition cannot be managed by a single Ministry. As mentioned already earlier **interdepartmental collaboration is crucial**, as is considering the principles of circular economy when determining all policies.

Comprehensive policies include:

- Upgrading national statistics and accounts;
- Introducing sustainability accounting;
- Changing taxation policies;
- Measures in the field of the use of space;
- Changing subsidy policies;
- Adjusting investment policies;
- Restructuring the banking sector;
- Transitioning to green public procurement;
- Directing science and research, supporting innovations;
- Building a suitable infrastructure;
- Educating and raising awareness among stakeholders.

Circular Culture – Citizens as the Core

It is crucial for the transition that the role of the consumer is abandoned in favour of the role of the user. Creative Industries also play a crucial role in establishing Circular Culture. Innovation and creativity promote thinking outside of the box, which is very important in Circular Economy, since it promotes the research and exploration of new modes of operation, manifesting in concrete creative practices carried out in the ambit of social entrepreneurship and NGOs.

Systemic change is only possible if the activities **of all three aspects are coordinated**. The public sector, the business sector and the citizens form a circle of interdependent stakeholders of circular change.

The Roadmap's four priority areas:

1. food systems;
2. forest-based value chains;
3. manufacturing; and
4. mobility.

Selection of priority areas was based on a combination of field work, relevant data and criteria, and research regarding comparable countries that have already published national CE roadmaps. The Roadmap describes for each priority area why it is an area of priority, and provides examples of good practices in the country, main gaps and promising prospects. They have been evaluated as those with which can strengthen the efficiency of material and primary resources, increase the value of materials, products or services, develop circular business models, strengthen energy efficiency, close off material flows, prevent waste generation, integrate green public procurement, modify patterns of use and strengthen the circular culture.

The priority areas which were finally selected have been evaluated as those with high potential to strengthen material and resources efficiency, preserve and extended the value of materials, products or services, develop circular business models, strengthen energy efficiency, close off material flows, prevent waste generation, integrate green public procurement, modify patterns of use, and strengthen the circular culture. For each priority, the Roadmap highlights an example of a good practice.

- **The food system** priority area includes all stages of production, processing, transport, sale, consumption of food and the collection and treatment of organic waste. The roadmap incentivises activities to reduce food waste, and promote sustainable/organic farming, buying locally produced food and promoting sustainable tourism. An important issue is the digitalisation of the agriculture sector.
- **The forest-based value chains priority area** includes all stages of preservation, production, processing, transport, sale of wood, waste wood treatment, wood products, and more widely also the field of nanotechnology, tourism, and construction (including high-rise buildings) as well as introduction of a circular bio-economy in Slovenia.
- **The manufacturing industry priority area** is one of the main and most export-oriented Slovenian sectors, while at the same time one of the main consumers of materials, water and energy. The Roadmap incentivises the development of circular products and processes, including eco-innovation. It is stated in the Roadmap that in order to maintain international competitiveness, compliance with circular principles became increasingly important.

- **The mobility priority area** includes all systems that relate to the movement of people and freight: different modes of transport, ranging from public to private, infrastructure, mobility-related habits. The Roadmap incentivises sustainable mobility such as modes of shared mobility, innovative smart platforms for shared passenger transport, smart management of transport etc.
- **Cross cutting topic “digitalisation”**: digitalisation plays an important role in promoting circular economy and eco-innovation development. It acts as one of the conditions and as a facilitator, which can significantly enhance the development of new business models and e.g. traceability of products and materials.

Besides the Circular Economy Roadmap a number of further strategic documents from other sectors establish a link to the topic of Circular Economy and define Circular Economy related targets and actions:

Framework programme for the transition to a Green Economy (including action plan)⁷

As part of its circular economy agenda, Slovenia adopted its Framework programme for the transition to a green economy⁸. Which sets out strategic guidelines on how to develop new green technologies, create jobs and promote Slovenian knowledge. It includes measures in nine areas: sustainable resource management; green growth; green jobs; green products and services; green tax reform; sustainable urban development; green public sector; green economy; and green practices in agriculture.

The Framework is a document by which the Government of the Republic Slovenia is starting a structured and systematic process of integrating knowledge and related implementation in the sense of coming “from words to action”.

The Framework incentives more sustainable production models and consumption patterns that allow the economy to prosper:

- while being competitive without harming the environment;
- while encouraging citizens to be actively involved in the planned processes as partners, investors, responsible citizens or innovative carriers of green knowledge and skills.

The prepared framework represents the basis for the establishment of a permanent dialogue or partnerships for green growth in Slovenia. The document states that in some areas, certain activities are already underway, but they are insufficiently interconnected and often do not have the effect they could have achieved otherwise. The Framework furthermore presents activities that are underway, or will start to be implemented in the near future. Green (circular) economy is included as one of the goals or orientations in the framework and all new strategic documents.

Strategic Development Innovation Partnership (SRIP) - Action plan for the Transition to a Circular Economy⁹

⁷ https://www.greencycle.si/wp-content/uploads/2018/01/opzg_akcijski_nacrt_in_nacrt_aktivnosti.pdf

⁸ https://www.gov.si/assets/ministrstva/MOP/Publikacije/e35669b8c8/povezani_za_rast.pdf

⁹ <https://www.stajerskagz.si/administracija/wp-content/uploads/2018/03/Akcijski-na%C4%8Drt-31-7-2017-SRIP-Kro%C5%BEno-gospodarstvo-WEB.pdf>

The Action Plan outlines the pillars that the Slovenian CE Roadmap uses to determine potential and priority areas. **The main objectives of this plan are the improvement of the material productivity index and the establishment of five new value chains with closed material flows.** The focal areas in the Action Plan include the following: sustainable energy, biomass and alternative raw materials, secondary raw materials, functional materials, processes and technology, and circular business models. Each of the focal areas is indirectly included in the areas of the Roadmap. It also highlights the potential for horizontal integration of the SRIP for circular economy with the other SRIPs from the Smart Specialisation Strategy.

6. Comparing Slovenian and Croatian Circular Economy policies

In below table the major policy documents of Slovenia are briefly described and compared with corresponding documents in Croatia (to the extent they exist).

More detailed background information on the mentioned Slovenian policy documents will be presented in the next chapter of this report (Chapter 8).

Table 16: comparing Slovenian and Croatian CE policies

Slovenia	Croatia
Enhanced waste policy in support of waste prevention and circularity	
Environmental Protection Act and waste related legislation has been updated in 2020 introducing newest EU Waste directives provisions.	The new Croatian Waste Management Act which transposes obligations from newest EU waste directives will be adopted in 2021.
In 2016, Slovenia adopted a second waste management plan / waste prevention plan and expand it to cover all waste streams. This has led to several positive developments in municipal waste management and in waste prevention. For example, Slovenia has adopted legislation for separate bio-waste collection when composting at home is not possible. There are also plans to increase home composting. Other key measures to divert bio-waste from landfilling include promoting high quality compost and digestate for fertilising purposes and guidance on good composting practices ¹⁰ .	Progress in waste management has been achieved with the Implementation of the waste management plan 2017-2022. It sets out the priorities for infrastructure planning, including support for separate collection and composting. The Waste Prevention Programme introduced certain measures to reduce waste generation: bio-waste, construction waste, municipal waste, WEEE, paper and cardboard waste. It is planned to update the Waste Management Plan in 2022 in line with the newest EU Circular Economy Waste policies, which will also include more advanced waste prevention measures.

¹⁰ https://ec.europa.eu/environment/eir/pdf/report_si_en.pdf

<p>Slovenia has established efficient municipal waste separate collection system, with 71% separately collected in 2018¹¹. Separate collection systems operate across Slovenia. They entail: (i) a door-to-door collection system to collect bio-waste (covering more than 90% of the country) and residual waste; and (ii) a drop-off system for dry recyclable.¹²</p>	<p>The Act on Sustainable Waste Management foresees an incentive fee for reduction of mixed municipal waste which contributed to progress in separate collection and is incentivising municipalities to meet landfill diversion targets plus to set up 'pay-as-you-throw' schemes.</p> <p>Croatia has insufficient system of separate collection of waste with 37%¹³ of separately collected municipal waste in 2019 and should enhance "door to door" and "drop-off" system for separate collection. As stated in the EC report the goal should be: "development of a more prescriptive collection service standard for implementation by LSGUs to ensure a high level of recycling, emphasising door-to-door separate collection, and ensuring a more rapid spread of door-to-door service throughout Croatia."¹⁴</p>
<p>Slovenia landfills only 5% of its municipal waste. Slovenia has introduced a network of reuse and waste prevention centres and an expanding set of recycling/composting plants in order to divert waste from landfilling.¹⁵ Also, the introduction of landfill tax helped reducing landfilling / increase recycling and re-use</p>	<p>Croatia still landfills most of its municipal waste (59% in 2019). Thus more advanced waste diversion measures are needed to be introduced as well as more recycling and recovery needs to be established. Croatia is still in the early phase of deploying such installations. Croatia has not yet introduced a landfill tax.</p>
<p>Bio-waste management in Slovenia is quite advanced with 84.2% of bio-waste being recycled in 2019.</p>	<p>In 2019, the share of bio-waste sent for recovery was 14%.¹⁶ Thus, more advanced measures and more efficient system of separate collection and recycling of bio-waste is need to be introduced in Croatia.</p> <p>The Food Waste Prevention Plan 2019-2022 has been adopted, accompanied by a detailed Program for its implementation.</p>
<p>ERP scheme includes waste packaging, WEEE, waste vehicles waste batteries and accumulators, waste tomb candles, tires, lubricating oils, medicines, and pesticides.</p> <p>Slovenia has a wider EPR scheme including waste tomb candles, pesticides and medicines then Croatia.</p>	<p>Croatia introduced EPR for packaging waste, waste vehicles, waste oils, waste batteries and accumulators, waste tires and EE waste.</p>
<p>Sustainable product policy initiative: sustainable designing and circularity in production processes</p>	
<p>The Circular Economy is one of Slovenia's strategic development priorities. It is closely tied to the</p>	<p>Industrial, specialization and innovation strategies does mention eco-innovations but it does not</p>

¹¹ <https://www.stat.si/StatWeb/en/News/Index/8419>

¹² https://ec.europa.eu/environment/eir/pdf/report_si_en.pdf

¹³ http://www.haop.hr/sites/default/files/uploads/dokumenti/021_otpad/Izvjesca/Kratki%20pregled%20KO%202019.pdf

¹⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018SC0414>

¹⁵ https://ec.europa.eu/environment/eir/pdf/report_si_en.pdf

¹⁶ http://www.haop.hr/sites/default/files/uploads/dokumenti/021_otpad/Izvjesca/Kratki%20pregled%20KO%202019.pdf

<p>Sustainable Development Goals (SDG's) and included in key national documents such as a Vision for Slovenia in 2050 and the Slovenian Development Strategy 2030 as well as in the Slovenia's Smart Specialisation Strategy. Slovenia has connected its relevant strategies in a way that they referees each other objectives. The Slovenia's development strategy until 2030 defines that transition to low carbon and circular economy is a priority development direction for the Slovenian economy.</p> <p>Industrial and Smart Specialisation Strategy highlights circular economy as one of its pillars for the industrial, research and social development. Above-mentioned strategies are reflected and elaborate in more details in the Roadmap towards the Circular Economy in Slovenia.</p> <p><u>Advanced policy documents in Slovenia with no corresponding strategy in Croatia:</u></p> <p>Roadmap towards the Circular Economy in Slovenia (2018) Framework Program for the Transition to a Green Economy with the Action Plan Strategic Development Innovation Partnership (SRIP) - Action plan for the Transition to a Circular Economy</p> <p>By adopting the Roadmap towards the Circular Economy in Slovenia, SRIP platform as well as the SRIP Action plan for the Transition to a Circular Economy Slovenia has established advanced policies and platforms for developing Circular economy solutions, eco-innovation and established connection and cooperation of CE stakeholders.</p>	<p>adequately mentions circular economy especially connected to sustainable product and circularity in production processes, e.g. the Industrial Strategy of the Republic of Croatia 2014 – 2020 is not including the concept of circular economy.</p> <p>The circular economy is not yet sufficiently recognized in Croatian strategic documents, which might lead to a lack of investment in research, development and innovation related to the circular economy. When updating these strategies CE aspects should get more attention.</p> <p>Croatia is planning to develop CE strategy and is at the beginning of the process. Croatia is missing cohesion and connection of relevant CE stakeholder, there is lack of policies, measures and instruments to connect public bodies, research institutions, industry and citizens in order to incentives, boost and develop CE solutions and develop eco-innovations.</p>
Green Public Procurement	
<p>Green public procurement system is <u>mandatory</u> in Slovenia for the following public procurement subjects: electricity, food, beverages, agricultural products for food and catering, office paper and hygienic paper products, electronic office equipment, audio and video equipment, refrigerators, freezers and their combinations, washing machines, dishwashers, air conditioners, buildings, furniture, cleaners, cleaning services and laundry services, passenger and transport vehicles and bus and coach services and tires.</p>	<p>The National Action Plan for Green Public Procurement covers priority groups of products and services: printing and copying paper, motor vehicles, electricity, cleaning services, telecommunications services and mobile telephony services together with devices, and office and information equipment (IT equipment). As the GPP scheme is <u>voluntary</u>, it is not often applied by public administration.</p>
Role of cities and local communities in the transition to CE	
<p>Increasingly important drivers for transfer to the circular economy are cities and municipalities in Slovenia.</p>	<p>Smaller municipalities with advanced waste management practices such as the cities of Prelog and Krk. Major cities are lagging behind in the CE transition.</p>

<p>Ljubljana adopted a Zero Waste Strategy and it is the leading EU capital when it comes to municipal waste recycling rate.</p> <p>Maribor adopted a Circular Economy Strategy.</p>	
<p>Circularity as a prerequisite for climate neutrality</p>	
<p>Slovenia is including circular economy as a tool to reduce GHG gasses and as a potential source of energy. Bio economy is recognized as a sector with high circular economy and climate and energy potential.</p>	<p>Croatian strategic climate and energy documents highlight circular economy development as part of the concept of low-carbon economy with a number of low carbon development measures. Bio economy is recognized as a sector, which could generate renewable biological resources. Croatian strategic climate and energy documents deal with energy production in sustainable waste management, waste from production processes, and energy recovery of waste.</p>

Comparing Slovenia and Croatia in the field of Circular Economy – what can we learn?

Slovenia can be a role model for Croatia on improving a separate collection and increasing recycling rates in a relatively short time. Slovenia has embraced the circular economy concept as a key driver for innovation in its business base, public sector and citizen's initiatives.

An important aspect in establishing circular economy is a political will. Slovenian Government has set circular economy as its main political task. Slovenia has set a goal in the CE roadmap to be a frontrunner in transition to CE in the Central and Eastern Europe and to establish Slovenia as a CE hub generating and developing innovative and advanced circular economy solutions.

The involvement of multiple stakeholders with the goal of facilitating the transition from a linear to a circular economy has been going on since 2016, starting with the Partnership for Slovenia's Green Economy project, taking place under the patronage of the Prime Minister and uniting over 3 000 partners.

The Government plays a crucial role:

- By taking concrete and effective cross-sectoral measures it has the potential to support the key factors that represent the potential for a Circular Slovenia on local, regional and national levels;
- By reinforcing its involvement in the Strategy of Smart Specialization and the established Strategic Research and Innovation Partnerships it can push R&D in the right direction;
- By actively collaboration with European Union institutions and other EU actors (participating both in R&D projects, and on "hands on" local level implementation projects) it can help financing Slovenian circular transition.

7. Slovenian policy documents of the various sectors in more details

The Slovenian Circular Economy Strategy and the process of its establishment have already been presented above. The current chapter presents strategic documents in the waste sector and other sectors, which are strongly interconnected with the successful implementation of Circular Economy, such as Energy, Climate Change, Industrial Development, Agriculture, Green Public Procurement and others.

Waste management program and waste prevention program¹⁷

In Slovenia, the Waste Management Programme and the Waste Prevention Programme are interlinked as an instrument of the Government of the Republic of Slovenia for the fulfilment of waste management and waste prevention targets. By adopting the programme Slovenia follows the strategic orientations of European policies, which, while emphasising waste prevention, favour the preparation for reuse and recycling of waste over energy recovery of waste, and the recovery of waste over its disposal, if and where this presents the best possible option from the point of view of environmental protection, taking into account technical feasibility and economic viability.

The objectives of the Waste Management Programme and the Waste Prevention Programme of the Republic of Slovenia are presented as part of the Annex 1.

Waste Prevention Programme

The Waste Prevention Programme addresses the prevention of waste in enterprises, households and the public sector and the following waste streams: construction waste, lightweight carrier plastic bags, bulky waste, food waste, textile waste and clothing. The measures of the waste prevention programme result from evaluations of the scenarios for the development of major waste streams from the waste management programme and the recycling targets.

The prevention programme contains the following 8 long-term objectives and 34 actions.

Some of these long-term objectives correspond with some of the focal sectors of the New Circular Economy Action Plan of the EU and therefore are of high relevance for the purpose of this task and the overall project. Hence, the 8 long-term objectives and 34 actions are presented below in detail:

I. Prevention of construction waste:

- uptake of techniques and technologies to increase the lifetime of building use (e.g. energy certificates for buildings, green public procurement instruments);
- prevent the use of hazardous substances and facilitate the separation of hazardous substances from non-hazardous substances (selective deconstruction of buildings, re-use of building elements and materials);
- awareness-raising and education on selective deconstruction and reuse of materials;
- end-of-waste criteria for construction aggregates.

¹⁷ https://www.gov.si/assets/ministrstva/MOP/Operativni-programi/op_odpadki.pdf

II. Prevention of waste in enterprises:

- web-accessible best practice documents on waste prevention techniques/technologies;
- launch programmes to identify and implement waste prevention potentials in companies;
- raising the Material Efficiency Index and to establish 5 new value chains with completed material flows by 2023;
- further training of those responsible for waste in businesses towards identifying and using the potential for prevention and re-use;
- support for the Eco-Management and Audit Scheme and ISO 14001 environmental management systems as a means of waste prevention, reuse and resource efficiency.

III. Prevention of household waste:

- information and awareness-raising of the population through various media.

IV. Prevention of waste of households-plastic bags:

- recording and monitoring the consumption of lightweight plastic bags;
- introduce of a fee for lightweight plastic bags;
- establish a consumer awareness programme for reduced use of lightweight plastic bags and educational programmes for children.

V. Prevention of food waste:

- establish a comparable methodology for monitoring data on food waste;
- analyse individual numbers of wastes that could cover food waste;
- assess the proportion of food waste among mixed municipal waste and bio-waste, carry out an assessment of the edible and inedible part of the food waste, obtain or evaluate the data on domestic composting;
- promote the reduction of food waste in households through publication in various media;
- incentivise the change the school curriculum with the aim of placing greater emphasis on education on prevention of food waste and a brochure as a method of continuous teaching material during the topic under discussion;
- provide support for organisations in advertising, campaigns, conferences and other projects aimed at raising awareness of the prevention of food waste, as well as demonstrating and promoting good practices in this field.

VI. Prevention of bulky waste:

- analysis of the material stream of bulky waste by fraction;
- incentives for re-use;
- awareness-raising on reuse through education.

VII. Re-use-measure and prevention of textile waste and clothing waste:

- awareness-raising and promotion for the reuse of clothing;
- encourage dialogue on enhanced cooperation between producers and importers and collectors of second-hand clothing;
- awareness-raising on re-use through school and adult education.

VIII. Prevention of waste in the public sector:

- recording of waste generated;
- prolonged use of products used for official purposes;
- sustainable furniture;
- green Public Procurement;
- education and awareness-raising of employees to reduce the generation of waste at work;
- awareness-raising and initiatives to promote good practice to other ministries and public services.

Slovenia's development strategy until 2030¹⁸

The strategy sets the transition to low carbon and circular economy as a priority development direction for the Slovenian economy. Slovenia has set two goals, which are related to the dimension of research, innovation and competitiveness in Slovenia:

- (I) a competitive and socially responsible business and research sector with focus on environmentally friendly and ecological technologies innovation, which, as an important factor in the competitiveness of companies, also contributes to reducing the burden on the environment;
- (II) the transition to a low-carbon circular economy as a priority development direction for the whole economy, and the link between economic growth will have to be broken and the growth in the use of raw materials and non-renewable energy sources and the associated increase environmental pollution.

Slovenia has defined the circular economy as one of the 12 goals of its development strategy until 2030, which should serve the country as a framework in the realization of the goals of the UN Sustainable Development Goals Strategy. The Strategy highlights that for a successful transition to a low-carbon circular economy, it is needed to break the link between economic growth and the growth of the use of raw materials and use of non-renewable energy sources and related increased burden on the environment. This will not be possible without a radical change in consumerism and production patterns, better utilization of resources already embedded in systems (e.g. mobility, built environment, food supply chains, and production chains), waste prevention, its use as a source of secondary raw materials and the establishment of an efficient waste management system.

Agenda for Sustainable Development By 2030¹⁹

The agenda as part of its objectives promotes sustainable industrialization and foster innovation. It promotes sustainable ways of production and consumption as well as Circular Economy principles.

Objective 9 of the Agenda highlights sustainable infrastructure, promotes inclusive and sustainable industrialization and aims to foster innovation.

Objective 12 highlights sustainable ways of production and consumption and defines the following goals and actions:

- Implement the ten-year framework of sustainable production and consumption programs;
- Achieve sustainable management of natural resources and their efficient use by 2030;
- By 2030, halve the amount of food discarded per capita worldwide at retail and at consumers and reduce food losses along the production and supply chain, together with post-harvest losses;
- By 2020, ensure proper management of chemicals and all waste materials throughout life cycle in accordance with agreed international frameworks and significantly reduce their releases to air, water and soil in order to minimize their adverse effects on human health and the environment;
- Significantly reduce waste by 2030 through preventive measures, consumption reduction, recycling and reuse;

¹⁸ https://www.gov.si/assets/vladne-sluzbe/SVRK/Strategija-razvoja-Slovenije-2030/Strategija_razvoja_Slovenije_2030.pdf

¹⁹ https://www.gov.si/assets/ministrstva/MZZ/Dokumenti/multilateral/razvojno-sodelovanje/publikacije/Agenda_za_trajnostni_razvoj_2030.pdf

- Support developing countries in strengthening scientific and technological capacity to move to more sustainable production and consumption.

Smart Specialisation Strategy (S4)²⁰

In 2015, the Slovenian Government adopted the Smart Specialisation Strategy, which is a platform for focusing development investments in areas where Slovenia has a critical mass of knowledge, capacities and competences and innovation potential for positioning in global markets, thus enhancing its visibility, including the objectives of the circular economy. The strategy aims to improve the material efficiency index and to establish five new value chains with completed material flows by 2023. The Strategy is an implementation plan for the transition to a highly productive economy through strengthening innovation capacity, promoting the transformation and diversification of industries into new ones activities and the growth of new and fast-growing companies. The Strategy identifies three priority pillars and nine areas of application where Slovenia achieves a critical mass of knowledge, capacity and competencies and thus possesses innovation potential for positioning in the world market:

- I. Digital: Smart cities and communities; Smart buildings and home with wood chain;
- II. **Circular: Networks for the transition to a CE**; Sustainable food; Sustainable tourism;
- III. Industry 4.0: Factories of the future; Health and medicine; Mobility; Materials as products.

The objective of the strategy is bringing stakeholders – economic operators, education and research systems, NGOs, the state and individuals – in value chains based on the principle of completed material flows and to develop new business models for the transition to a circular economy.

The following focus areas and technologies are defined in the document:

- Biomass processing technologies and the development of new biological materials;
- Technologies for the use of secondary raw materials and reuse of waste;
- Extraction of energy from alternative sources.

The strategy states that in the field of technologies for the use of secondary raw materials and reuse, there are significant potentials in the construction, paper, rubber, agriculture, metallurgy and food industries. It is noted in the document that the use of biomass is not only an option for energy production, but also initiatives related to the use of biomass for new biological materials and related products in the paper and chemical industries are highlighted.

As part of its 'smart specialisation strategy', Slovenia has a well-developed plan to make the best possible use of the European Structural and Investment Funds to accelerate the transition to a circular economy.

Slovenian Industrial Strategy 2021-2030²¹(in public discussion)

²⁰ <https://www.gov.si/assets/vladne-sluzbe/SVRK/S4-Slovenska-strategija-pametne-specializacije/Slovenska-strategija-pametne-specializacije.pdf>

²¹ <https://www.gov.si/novice/2020-09-17-osnutek-slovenske-industrijske-strategije-2021-2030-v-javni-razpravi/>

The purpose of the document is to set guidelines for the further development of Slovenian industry in the period 2021-2030 with a vision for Slovenian industry to become green, creative and smart. The aim of the strategy is to create a sustainable industrial that, in line with the smart specialization strategy and other development directions, will promote innovative solutions, the introduction of state-of-the-art technologies and the transition to a low-carbon circular economy.

The industrial strategy brings together various industrial chains, large companies, micro, small and medium-sized enterprises, including start-ups (hereinafter SMEs), academic and research institutes and other stakeholders. The main drivers of development are research, development and innovation.

One of the key functions of the strategy is to create the conditions for connecting different actors and for learning and carrying out new innovative projects that push the boundaries of development, e.g. new technologies, the length of the product life cycle, the need to recover raw materials from waste increase the importance of innovation not only for the future development of companies, but also for their long-term survival in increasing global competition.

As one of the crucial national projects the Industrial Strategy sets „**The project of decarbonising Slovenia through the transition to a low-carbon circular economy**”.²²

In 2019, the Government of the Republic of Slovenia informed the public on the preparation of a comprehensive strategic project of decarbonisation of Slovenia through the transition to a circular economy.²³

The content of the proposed solutions of this comprehensive strategic project is structured in three pillars, each of which consists of several programs, which are interconnected and hence strengthen and upgrade each other:

- the "Smart and Circular Communities" pillar includes programs of circular schools, circular learning and resources, and circular synergies for the establishment of smart and circular regions;
- The "Circular Development" pillar includes programs in the field of entrepreneurship (circular detection and support of circular innovations in small and medium-sized enterprises and a program in the field of monitoring implementation);
- The "Circular Policy-Making and Science" pillar includes programs in the field of higher education, circular education, policy-making for the transition to a circular economy and in the field of circular public procurement.

These three pillars are connected by three horizontal programs:

- The establishment of a “**Centre for the transition to a smart and circular society**”, whose task will be to coordinate the contents of the program and to connect all relevant initiatives and projects in this field;
- Setting up of a “**Transformational capital**”, the purpose of which is to enable the strategic combination of different sources of financing and to establish a new investment logic in order to achieve the appropriate transformative effects with the funds spent;

²²[http://vrs3.vlada.si/MANDAT18/VLADNAGRADIVA.NSF/71d4985ffda5de89c12572c3003716c4/349a3ba8b0ba3d4ac12584a80040bf67/\\$FILE/VGKrožno_P.pdf](http://vrs3.vlada.si/MANDAT18/VLADNAGRADIVA.NSF/71d4985ffda5de89c12572c3003716c4/349a3ba8b0ba3d4ac12584a80040bf67/$FILE/VGKrožno_P.pdf)

²³ The project is implemented by the Ministry of the Environment and Spatial Planning, Ministry of Economic Development and Technology, Ministry of Education, Science and Sport, the Ministry for development and European cohesion policy, the Ministry of Infrastructure and the Ministry of Agriculture, Forestry and Food are preparing as a pilot activity at European level in cooperation with two European public bodies - the European Institute of Innovation and Technology (EIT) and the Joint Research Centre (JRC) European Commission (EC).

- The creation of a “**Circular Pilots program**” is based on the Smart Specialization Strategy and the Slovenia Signpost for the transition to a circular economy; through its implementation, we will contribute to the creation of a path / foundation for decarbonisation and the transition to circular business models in relevant areas of industry.

Green Public Procurement

From 2018, a **green public procurement system is mandatory in Slovenia**. In legal terms green public procurement is implemented through the implementation of the Regulation on Green Public Procurement²⁴. The GPP in Slovenia is used as a public financial instrument to pursue environmental policy objectives. The Regulation lays down mandatory minimum environmental requirements and recommendations for the following public procurement subjects: electricity, food, beverages, agricultural products, food and catering, office paper and hygienic paper products, electronic office equipment, audio and video equipment, refrigerators, freezers and their combinations, washing machines, dishwashers, air conditioners, buildings, furniture, cleaners, cleaning services and laundry services, passenger and transport vehicles and bus and coach services and tires.

GPP opens up the way to the “greenification” of the public sector, transitioning to circular products and services, acting as a stimulus for the economy and placing the public sector among the key agents of the circular transition. GPP provides an excellent opportunity for pilot projects, emphasizing the principles of circularity, such as eco design, repairs, renovation and remodelling, replacing products with services, reducing carbon footprints by involving local providers and shortening transport routes, employing renewable sources by means of the electrification of transport, minimizing the generation of waste (e.g. by tackling the issue of surplus food in public institutions), etc.

According to the calculations of the European Commission, in 2009 the share of public procurement in Slovenia in the national GDP amounted to as much as 17.3%, so public procurement can have a significant impact on economic growth and the market.²⁵

*Comprehensive National Energy and Climate Plan of the Republic of Slovenia*²⁶

The strategy’s goal is adapting to climate change, which includes the transition to a climate-neutral and circular economy. It should ensure competitiveness and quality of life of the population while preserving natural resources. This requires a change in production and consumption into more sustainable forms. According to the strategy the main focus areas are: renewable energy sources, efficient use of energy in buildings, nuclear energy, electricity and electrical systems, heat and heat systems and circular economy.

The Strategy also includes measures in other sectors:

Agriculture measures: provide incentives for the collection of agricultural biomass (crop residues, manure, etc.) at the sites of major biogas plants.

Waste measures and policies: reducing the amount of waste generated and promoting reuse and recycling.

²⁴ <http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED7202>

²⁵ https://www.gzs.si/skupne_naloge/varstvo_okolja/vsebina/Razpisi-in-poslovne-prilo%C5%BEnosti/Zelena-javna-naro%C4%8Dila

²⁶ https://ec.europa.eu/energy/sites/ener/files/si_final_necp_main_sl.pdf

Promoting GHG emission reductions through waste management regulations:

- Changes in the environmental tax in the field of waste disposal;
- Improving the packaging waste collection system;
- Enforcement of payment for waste collection in accordance with the amount of waste delivered;
- Providing conditions for the use of compost from waste treatment;
- Landfill gas capture and use;
- Waste awareness projects;
- Energy recovery of waste in accordance with the Waste Management Program and the Waste Prevention Program.

Examples of planned measures regarding energy recovery of waste in Slovenia:

- Processing and production of synthetic fuels;
- Heat treatment (industry, district heating systems, etc.);
- Review of the classification of waste from the wood processing industry and waste products of cutting in order to use it as an energy material and to exploit these materials in Slovenia.

The strategy also provides financial support schemes to foster its implementation, namely grants for measures to reduce GHG emissions in industry through circular economy measures.

Last but not least, there is a strong knowledge pillar in the strategy: Planning and development of training for the transition to a climate-neutral society.

Resolution: "Our food, countryside and natural resources after 2021" – Strategic Framework for the Development of Slovenian Agriculture²⁷

The purpose of the document is to define the basic strategic framework for the operation of agriculture, food and rural areas and is the basis for a new strategic planning for the period after 2021.

The principles of the circular economy are an important part of the rural development strategy. The opportunity to transition to the bio-economy as a new paradigm in organization of business processes has been recognized. The measures support reducing the technology gap (technological modernization and digitization), as well as the impact of climate change. The Strategy address structural problems and promote solutions towards the transition to a circular economy, as well as achieving higher added value throughout the production chain.

Reducing the negative impacts on water, soil and air will be woven into all activities related to food production and processing. Agricultural and forestry holdings and the food industry must strive to: the economical and sustainable use of resources and the principles of the circular economy, increasing water and energy efficiency, use and conservation of Slovenian genetic resources, use of renewable energy sources, the use of by-products, waste, residues and other non-food raw materials for bioeconomy purposes, reducing emissions from agriculture, promoting carbon sinks in agriculture, forestry and wood processing sector, the use of sustainable materials in the product design and monitoring process product life cycle. The development of a sustainable circular bioeconomy

²⁷ <https://e-uprava.gov.si/.download/edemokracija/datotekaVsebina/382689?disposition=inline>

represents a great opportunity for development rural areas with a key role for sectors that identify and provide biomass as important input material. Attention must also be paid to reduce food losses and discards in the whole food supply chain.

Conclusion:

In this section of the report, a screening of all documents was performed in which circular economy aspects could or should play a role. It can be concluded, that Circular Economy is one of Slovenia's strategic development priorities. It is closely tied to the Sustainable Development Goals (SDG's) and included in key national documents such as "A Vision for Slovenia in 2050" and "Slovenian Development Strategy 2030" as well as in Slovenia's Smart Specialisation Strategy. The next chapter will focus on specific practical initiatives already taken or currently ongoing (EU Projects, public bodies initiatives, business community initiatives).

8. Ongoing projects and initiatives related to Circular Economy

General remark:

The Government has signed partnership/cooperation agreements with various key European platforms and multipliers, including:

- Smart Specialisation Thematic Platforms (SSTP) - SRIP partners are members of different interregional partnerships under Industrial Modernisation, Energy and Agri-Food Platforms, with pilot projects and action plans being designed;
 - Vanguard Initiative – pilot projects on Bio-economy and Efficient and Sustainable Manufacturing;
 - European Institute of Technologies (Climate KIC and Raw Materials KIC) to foster transfer, through deep demonstration, to circular economy;
 - The Republic of Slovenia is also a member of the CE100 Ellen MacArthur Programme, a leading global foundation in the field of Circular Economy;
 - Regarding eco-innovation, the state also plays a key role by promoting long-term collaborations in the form of R&D partnerships (SRIPs). SRIPS – Circular Economy (Strategic Research and Innovation Partnership – Networks for the transition into circular economy) aims to connect Slovenian businesses, educational sector and research institutions and non-governmental organizations in developing new value chains according to the economic principles of closed material flows. More than 400 companies and 100 knowledge institutes currently participate in SRIPs.
- The Slovenian Government's goal is to establish Slovenia as a Circular Economy role model for Europe and to become a circular economy front-runner in the Central and Eastern Europe.

Flagship projects:

Below some of the projects with highest relevance for promotion of Circular Economy are presented. Descriptions of further relevant projects promoting and implementing Circular Economy can be found in Annex 3 of this report.

Strategic Research and Innovation Partnership on Circular Economy – Network for the transition into circular economy (SRIP – Circular economy)

SRIP is a cross-sectoral strategic cluster-type organisation, born in 2016. It is a dedicated Smart Specialisation network for innovation in the circular economy transition.

The founders of SRIP are the Chamber of Commerce and Industry of Štajerska (management function), the National Institute of Chemistry and the Faculty of Chemistry and Chemical Technology of the University of Maribor.

Funding: SRIP's activities are 50% co-financed by central Government and member contributions.

SRIP is a connection of Slovenian business subjects, educational and research institutions (RDI), non-governmental organisations and other interested parties, in collaboration with the state, aiming to establish new value chains according to the economic principles of closed material flows. It is a platform for concentrating Slovenian development investments with high innovation potential. It serves as a platform for companies to forge new projects that can be financed through different financial instruments. The main role of SRIP is to raise awareness about the circular economy concept, support and equip the companies with necessary knowledge, help them drafting the project documentation and provide an open space for networking.

SRIP – Circular Economy is one of the nine SRIPs of Slovenia's S3 implementation architecture, co-financed by the Ministry of Economic Development and Technology (MGRT) and instrumental in facilitating dialogue between the government, local authorities, research institutes, business and other stakeholders. SRIPs were founded in response to a special call launched as a collaboration between the three lead Slovenian Ministries responsible for economy, technology, science and EU Cohesion Policy, with respect to each main S3 priority domain. The call was designed on the basis of an intensive Entrepreneurial Discovery Process (EDP) convened in 2015, involving a series of web based and face-to-face workshops, including events open to general public.²⁸

The vision of SRIP – Circular economy is to sustainably increase the efficiency and competitiveness of the domestic economy in the transition into circular economy. The long-term effect of SRIP involves contributing to the recognisability of Slovenia as a circular economy hub that will set the reference standard for top professionals and foreign investors through its knowledge, R&D infrastructure, breakthrough technologies and services, as well as its regulatory support environment.

GOALS:

- 1) Long-term public-private partnership;
- 2) Improvement of the material efficiency index / productivity;
- 3) Establishment of new value chains with closed material flows;
- 4) New business models.

²⁸ <https://s3platform.jrc.ec.europa.eu/en-US/w/strategic-research-and-innovation-partnership-on-circular-economy>

By meeting the set goals, all the members of SRIP will also contribute to the fulfilment of the goals of the Slovenian Smart Specialisation Strategy (S4), i.e. to boost Slovenia's competitiveness in global markets by increasing the added value per employee, the share of knowledge-intensive and high-tech exports in total exports, and overall entrepreneurial activity.

SRIP is a public-private cluster-type innovation eco-system in its own right. Unlike many cluster organisations, the SRIP is not organised around the needs of a single sector. Instead, its ambitions are distinctly cross-sectoral, with special priority given to the following six focus areas:

- Sustainable energy;
- Secondary raw materials;
- Functional materials (e.g. sustainable composites, advanced packaging);
- Biomass and alternative raw materials;
- Processes and technologies;
- Circular business models.

The Sustainable energy focus area directly addresses the S4 focus area Production of energy based on alternative sources and is centred on niche technological areas with a large potential for growth, where Slovenian companies exhibit an export potential and a vision for the development of breakthrough products and services with high added value, for example energy usage of waste material flows, optimisation of energetic and material efficiency, external energy sources and new business models. These areas combine several technological and product directions that, in accordance with the capability of Slovenian industry, round up the potential common development activities of the involved stakeholders.

The primary goal of the secondary raw materials focus area is to create systemic solutions for technological development in waste treatment and disposal that will allow the present make-use-dispose paradigm to be shifted towards a more responsible circular resource management. Plans include the development of technologies for converting waste into useful products, secondary raw materials or forms that allow for harmless disposal, technologies for waste treatment with a view to reuse and for the refurbishment or repair of used products for the purpose of extended use. The technological areas include: a) processing of industrial and construction waste, b) processing of biological waste into value products, c) circular economy of material flow for electrical and electronic equipment waste, d) water waste treatment technologies and extraction of materials and energy from them, e) sustainable drinking water management.

The goal of the Functional materials focus area is to develop the next generation of advanced composites and functional systems that will incorporate the building blocks of biomass waste or other waste, as well as nanoparticles (e.g. nanocellulose, inorganic nanoparticles, magnetic nanoparticles, etc.) and will enable the production of new high-performance construction and special products that are environmentally-sustainable and at the same time provide improved characteristics, long-term efficiency and better durability and value. Two focus sets have been identified in the following areas of technology: sustainable composites and advanced packaging/materials. The result will be new export-competitive products on the traditional markets of paper and paper processing industry, textile industry, medicine, construction industry, automotive industry and polymers, adhesives and coatings industry.

The goal of the Biomass and alternative raw materials focus area is to facilitate the development of breakthrough technologies, as well as innovation and product development in the area of innovative (bio) products based on renewable raw materials. Taking into account the demonstrated interest of

stakeholders, the untapped Slovenian competitive advantages and the country's resulting development potential, the Biomass and alternative raw materials focus area has been designed for the development of the following technological fields: (i) sustainable mobilisation of biomass; (ii) lignocellulose biorefinery for the isolation of polymer biomass building blocks and (iii) extracts and biorefineries that produce alternative raw materials, and a diversified range of product, development of alternative raw materials for the development of innovative (bio)products.

The Processes and technologies focus area is primarily centred on the challenge of how to introduce into the domestic processing and production industry completely technologically-innovative processes and technologies where the emphasis is on the development of bio-based green chemicals and materials, processes for the production and processing of polymers, biotechnologically-produced compounds, continuous production of compounds and new production equipment with guidance. In this context, it is important to know, while keeping the input raw materials and output products the same, how to adjust the processes and technologies to operate more economically, by wasting less energy and/or with lower greenhouse gas emissions.

The Circular business models focus area is mainly centred around the technological field of sustainable processes and networks, where the focus is on the development of an open computer platform with the goal to bring about a framework for higher technological and economic, as well as environmental efficiency of technologies, processes and companies to allow for sustainable long-term development and business.

SRIP offers its members a full range of support services including professional assistance in developing circular business models, collaboration in larger research and development projects and internationalisation through networking and cooperation. Key tools developed by SRIP include the Competence Centre for Circular Economy, focused on human resource development in a future circular business context. The activities of individual SRIP members have focused on a wide range of relevant 'circular' technologies relating to reuse, remanufacturing and secondary raw materials, whilst members have gained new key competences in areas such as Life Cycle Analysis and Cradle to Cradle certification.

SRIP is a type of **Public-private partnerships** (PPP) in which the Chamber of Commerce and Industry of Slovenia is involved (as partner and lead partner) and started. The aim of these PPPs is to create strategic research and innovation partnerships between businesses and R&D organisations in different sectors according to the Smart Specialization Strategy. SRIP also offer services and create new value chains.

Public-private partnership in Slovenia is regulated by the Public-Private Partnership Act (OG 127/06). Slovenia's legal framework provides comprehensive guidelines for project planning, award and risk allocation. So far, PPP has been used at a small scale mainly at the local level (municipalities) in e.g. social housing, kindergartens, waste management, etc.. Most PPPs that are executed in Slovenia are settled in the fields of construction of infrastructure (nursing homes), transport and logistic and waste water treatment. There are some local PPP initiatives between local companies and their municipalities for waste management and waste water treatment.

Cities' and municipalities' role in transition to Circular Economy - The city of Ljubljana's Zero Waste Strategy

Increasingly important drivers for transfer to the circular economy are cities and municipalities in Slovenia, as well as the non-governmental sector, which increasingly promote a more sustainable lifestyle, circular and eco-innovative development.

The capital of Slovenia, Ljubljana with separate collection and recycling rates of 69,5% is **the European capital with the largest share of separately collected waste**²⁹.

The City of Ljubljana introduced measures that encourage citizens to sort waste such as door-to-door collection and Pay as you throw system. Separate collections measures also include higher frequency for separated streams as compared to mixed waste. The door-to-door collection, especially of biowaste, has led to a rapid increase in recycling rates.

Ljubljana Regional Waste Management Centre³⁰ is the most modern facility for waste treatment in Europe, processing waste from more than a third of Slovenia. The main part of the regional centre consists of three facilities for mechanical-biological waste treatment, where two types of waste are processed: separately collected biowaste and residual mixed municipal waste. Bulky waste is also accepted and assorted. The regional centre perform waste recovery by extracting raw materials in a way that the greatest possible amount of usable material is extracted and reduce the quantity of disposed waste as well as composting separately collected biowaste.

Ljubljana has adopted a **Zero Waste Strategy** – the Strategy for the Development of Activities in the Field of Waste Management in the Municipality of Ljubljana for period 2014-2035. The Strategy strengthens the first three priorities in the field of waste management: prevention, re-use and recycling, and commit to strategy objectives in order to minimize landfilling and energy use and gives priority to recycling, recovery and transformation of materials over energy recovery and disposal. The goals of the Strategy are:

- Raising the recycling rate to 75%;
- Reduce the annual amount of residual waste per inhabitant to 60 kilo;
- Decrease the amount of landfilled waste to 30 kilo per inhabitant.

With high recycling rates, advanced waste policies and advanced practices Ljubljana is the one of the leading capital in transition to Circular Economy.

Strategy for the Transition to Circular Economy in the Municipality of Maribor

The Strategy is a local government level document which gives a clear signal that the city of Maribor is at the strategic level being completely directed into the circular economy.

The strategy was developed through the [Wcycle project](#), which produced a new business and economic model of efficient resource management, based on the policy of circular economy. WCYCLE was created by five Maribor utilities companies in 2017, with the aim of closing material loops produced in urban areas every day, bringing tangible benefits for public services and citizens. Different WCYCLE sub-projects foresee reuse of brownfield areas, reuse of wastewater in combination with

²⁹ <https://www.vokasnaga.si/en/separating%20waste>

³⁰ <https://www.vokasnaga.si/en/Regional%20Waste%20Management%20Centre>

rainwater, reuse of construction waste and innovative reuse of bio-waste together with soil from construction works. The project partners provide implementation strategies and establish cross - sectoral cooperation and governance. As well as a toolbox for circular economy deployment and a [transnational circular economy marketplace – cooperation platform is established](#).

Strategy is an own **innovative model as a** system for managing all the resources available in the Municipality of Maribor and the wider urban area. The model is based on the operation of enterprises that are predominantly publicly owned, which already provide public services for residents, and thus are the city's bottlenecks that until now have not functioned as a connecting link, which is a fundamental principle in the transition from linear to circular economy.

Only close cooperation between public companies, citizens, industry and local self-government can lead to a successful interconnected system that optimizes resources and results – economic, environmental and social. The Strategy is a long-term project that provides development-oriented efficient management of resource flows in local and regional environments.

The purpose of the Strategy is cross-sectoral cooperation in handling, processing, re-use and development of resources, which deals with the circular economy in Maribor in seven selected sectors (i.e. pillars or circles). In addition to the mutually beneficial cooperation of public sector companies, the goal of companies is to process the generated waste or deliver it to other sectors, including excess heat and waste water. This will be interconnected with the development of an interactive information support tool.

The idea is based on the concept that companies in the city, with the aim of creating a regenerative urban environment and providing quality services for their citizens, share information and work together to achieve the highest possible rate of reuse of waste, excess heat and wastewater as new sources, while respecting the quality of land use, the development of sustainable urban mobility and a cooperative economy. This approach is truly innovative from all aspects of implementation – technological, organizational, social, cultural and behavioural innovation with a systematic, eco-innovative approach

Strategic project areas in the strategy: 1. Municipal waste management 2. Handling of construction and industrial waste 3. Waste energy management 4. Management of transport services 5. Reuse of water 6. Cooperative economy.

The positive consequences of these practices are the emergence of new business opportunities for the Municipality of Maribor, the people and the economy, the creation of high-quality, mainly green jobs, new added value and a fresh economic boost.

ANNEXES

Annex 1: Institutional Framework in Slovenia

The competence to regulate waste management and to carry out waste-related tasks lies with the state as well as local communities. Municipalities independently carry out matters of public interest defined by the general act of the municipality or are defined as original tasks by law. In order to meet the needs of the population, they carry out in the field of waste in particular the collection and treatment of municipal waste and other environmental protection activities and, within their respective spheres of competence, regulate, manage and, in accordance with the Local Self-Government Act, provide municipal public services.

Municipal waste management falls under the original competence of the municipalities. Consequently, control of the management of this type of waste is also the responsibility of the municipalities' supervisory authorities, as also laid down by their decrees, which lay down, inter alia, the obligation to record and rehabilitate illegal waste disposals. In the case of inappropriate dumping of other wastes into the environment, national inspectors shall be responsible for monitoring and taking action.

Detailed institutional overview:

Table 17: Overview of institutional framework in Slovenia related to CE

Responsible Slovenian institutions	Role
Ministry of the Environment and Spatial Planning	The Ministry of the Environment and Spatial Planning is the key institution responsible for establishing a regulatory framework and policies with respect to waste and material policy.
Slovenian Environment Agency	<p>The Slovenian Environment Agency is a body of the Ministry of the Environment and Spatial Planning. The Agency is the enforcement body for waste legislation. It issues permits, certificates and authorizations on the basis of waste regulations. It collects and manages data on waste management and maintains waste related registers.</p> <p>The Agency performs expert, analytical, regulatory and administrative tasks related to the environment at the national level.</p> <p>In the field of waste management, the Agency has the following responsibilities:</p> <ul style="list-style-type: none"> - issues administrative acts (permits, certificates, authorisations) on the basis of regulations on waste management.

	<ul style="list-style-type: none"> - prepares forms available on the website in order to help applicants for different permits, certificates and authorisations. - prepares explanatory notes on certain chapters of the legislation regulating waste management. - issues decisions on the assessment of tax and exemption from taxes in the field of waste disposal. - manages various registers: the Agency keeps different registers, e.g. registers of persons providing recovery, disposers, collectors, transport operators, dealers and brokers in waste management, and a register of suppliers of batteries and accumulators.
Inspectorate for the Environment and Spatial Planning	<p>The Inspectorate for the Environment and Spatial Planning is a body within the Ministry of the Environment and Spatial Planning.</p> <p>It supervises the implementation of regulations in the field of housing and surveying as well as in the fields of environmental protection and nature conservation, water management, industrial pollution and genetically modified organisms. It also performs administrative and expert tasks in the field of cross-border shipment of waste, with the exception of radioactive waste.</p> <p>The environmental inspectors conduct inspections in the fields of environmental protection and nature conservation, water use and management, cave protection, and genetically modified organisms. They pay special attention to the supervision of the environmental permit holders for installations or facilities that might cause large-scale environmental pollution and for facilities that pose a greater risk of environmental incidents.</p> <p>The inspection is competent for the supervision of waste management and cross-border shipment of waste, industrial pollution, including the supervision of small combustion installations, and water quality.</p>
The Ministry for Economic Development and Technology	<p>The Ministry of Economic Development and Technology provides support necessary to further strengthen the international competitiveness of Slovenian companies and change the composition of the Slovenian business sector so that it is adapted to the requirements of the global economy to the greatest possible extent. Through various measures it provides a stable, predictable and competitive economic environment for the growth and development of Slovenian companies on Slovenian and foreign markets.</p> <p>Its areas of work include internationalisation, entrepreneurship, technological development, tourism, the internal market, regional development and the wood industry.</p>

	The bodies within the ministry perform tasks related to intellectual property, market inspection and metrology, while implementing institutions carry out particular measures of the Ministry
Customs Service	Relevant in the context of this report is their responsibility for waste shipment control.
Ministry of Agriculture, Forestry and Food	The Ministry of Agriculture, Forestry and Food promote the sustainable development of food supply chains, preservation of natural resources and care for a vital countryside. We value natural resources and therefore promote environmentally, economically and socially sustainable management of forests and integrated development of fisheries.
Ministry of Education, Science and Sport (MESS)	MESS covers all fields of education (from a pre-school level to the university level), science and sport. Together with the Slovenian Research Agency, MESS constitutes the basic pillar for R&D funding.
The Ministry of Health	The Ministry is competent for the implementation of the REACH Directive in Slovenia in order to limit the level of toxicity in products.
Government Office for Development and European Cohesion Policy	The office is responsible for: European cohesion policy, development, European territorial cooperation and international financial mechanisms. In addition, it is involved in the preparation of the Slovenia's Development Strategy and other strategic documents. The office also monitors the implementation of development policies and programmes.
Council for Science and Technology of the Republic of Slovenia	The Council is a professional advisory body to the Government of the Republic of Slovenia. Its competences are as follows: proposes a platform for the National R&D Programme and its yearly implementation; monitors and evaluates the results and effects of research activities and the implementation of PROs work programmes; provides opinion on the methodology and criteria for assessing R&D performance.
Public Agency of the Republic of Slovenia for the Promotion of Entrepreneurship, Innovation, Development, Investment and Tourism (SPIRIT Slovenia)	The Agency was created in 2013 by merging three institutions: the Public Agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments, Slovenian Tourist Board and the Public Agency for Technology of the Republic of Slovenia. The focus areas of SPIRIT are entrepreneurship, technology, innovation, foreign direct investment, internationalisation and promotion of the Slovenian economy and Slovenia as a tourist destination. It is one of the main eco-innovations funders in Slovenia.
Council for Science and Technology of the Republic of Slovenia	The Council is a professional advisory body to the Government of the Republic of Slovenia. Its competences are

	<p>as follows: proposes a platform for the National R&D Programme and its yearly implementation; monitors and evaluates the results and effects of research activities and the implementation of PROs work programmes; provides opinion on the methodology and criteria for assessing R&D performance.</p>
<p>Slovene Enterprise Fund (SEF)</p>	<p>The SEF is a public financial fund for financial support to Slovenian micro, small and medium-sized enterprises (SMEs) with favourable guarantee, credit and equity lines for the growth and development of the SMEs and start-up lines for new enterprises.</p> <p>The purpose of SEF's operation is to improve access to favourable financial resources in the market. To achieve that purpose the SEF offers financial instruments in the form of:</p> <ul style="list-style-type: none"> • Start Up Incentives to young enterprises (start-ups less than 12 months old) in the first development phase, • Seed Capital to young enterprises (less than 5 years old) in the second development phase and their entrance on the market, • Venture Capital for the fast-growing innovative enterprises in the third development phase in the form of capital investments and mezzanine loans together with private investors through venture capital companies, • Microcredits represent direct credits of SEF at an affordable contractual interest rate, for the fourth development phase, • Guarantees as collateral for bank loans with interest rate subsidy that represent the largest share of the approved funds of SEF, for the fourth development phase and • Special Incentives for specific target groups of companies or specific purposes (for the development of the timber industry, for the digital transformation of SMEs).
<p>Slovenian Environmental Public Fund</p>	<p>The Fund promotes development in the field of environmental protection. It is the only specialised institution in Slovenia that provides financial supports for environmental projects. The financial assistance is offered mainly through soft loans from revolving funds and since the year 2008 through grants. More specifically the "Eco Fund" offers: Loans to legal entities (municipalities and/or providers of public utility services, enterprises and other legal entities) and sole traders for investments in environmental infrastructure, environmentally sound technologies and products, energy efficiency, energy saving investments, and use of renewable</p>

	energy sources. Loans to individuals (households) for conversion from fossil fuels to renewable energy sources, energy saving investments, investments in water consumption reduction, connections to sewage system, small waste water treatment plants, replacement of asbestos roofs.
The Slovenian Research Agency (SRA)	SRA performs tasks relating to the National Research and Development Programme and creation of European Research Area. It supports R&D in the public sector through manifold research programmes carried out by programme groups in public research institutions, universities, etc.
Association of Municipalities and Towns of Slovenia	Waste collections and transport to waste management and disposal sites are the responsibility of the municipalities.
The Chamber of Commerce and Industry of Slovenia (CCIS)	CCIS is the largest independent, voluntary, non-profit association of companies in Slovenia. Under the umbrella of the Chamber of Commerce and Industry, 26 economic sectors are represented, representing all sectors of the economy in Slovenia. The Chamber supports changes for faster transition to a circular economy. The Strategic Research and Innovation Partnerships' (SRIP) Action Plan for the transition to a circular economy which is coordinated and managed by the Chamber of Commerce and Industry of the Štajerska region of Slovenia.
The Environmental Research Institute	It deals with research and project activities related to circular economy. It implements projects and programs of innovative reduction of waste management costs, opening of new development possibilities and schemes of integrated waste management. It is the initiator of modern, environmentally and socially responsible activities in the field of waste prevention.
NGO Circular Change	A private non-profit organisation with a strong international network serving as the best entry point for circular economy projects across Europe. Its goal is to create the transition to a circular economy in Slovenia and the EU through cooperation with the government, municipalities, companies, experts and researchers.

Annex 2: Slovenian legislation related to waste management and circular economy

Regulations in the field of waste management are adopted on the basis of the Environmental Protection Act. The umbrella regulation in the field of waste is the Decree on Waste, which transposed the EU Framework Directive 2008/98/EC into Slovenian law. The Decree lays down rules of conduct and conditions for the prevention or reduction of adverse effects of generation for all types of waste and their management, except where individual regulations or conditions for a particular type or flow of waste are regulated differently. Individual types or streams of waste, such as waste oils, packaging, grave candles, electrical and electronic equipment, batteries and accumulators, used tires, used vehicles, are governed by special regulations. Special regulations also regulate the disposal of waste in landfills and the incineration of waste.

Waste management under extended producer responsibility is currently in force for the following waste streams: packaging, electrical and electronic equipment, portable batteries and accumulators, candles for graves, plant protection products containing hazardous substances, medicinal drugs, and end-of life tyres and vehicles.

List of regulations related to Waste Management and CE:

1. Environmental Protection Act (OG 39/06,49/06, 66/06, 33/07,57/08,70/08, 108/09,48/12, 57/12, 92/13, 56/15; 102/15, 158/20)

The Act regulates the protection of the environment against pollution as a basic condition for sustainable development and in this context determines the basic principles of environmental protection, environmental protection measures, environmental monitoring and environmental information, economic and financial instruments of environmental protection, public environmental protection services and other environmental issues. The Act sets objectives related to circular economy such as sustainable use of natural resources, reduction of energy use and greater use of renewable energy sources, increasing the material efficiency of production and consumption; and abandonment and replacement of the use of hazardous substances.

2. Objectives of the Waste Management Programme and the Waste Prevention Programme of the Republic of Slovenia

I. General objectives:

1. To prevent or reduce the adverse effects of waste generation and management:
 - prevention of waste,
 - preventing illegal dumping of waste.

2. To achieve a recycling society with a high degree of efficiency in the use of natural resources, ensure that waste management is subject to a priority order of waste prevention and management in accordance with the waste hierarchy of waste regulation:
 - channel the collected waste to recycling,
 - non-recyclable waste which exceeds the prescribed requirements for landfilling should be directed towards recovery into solid fuel or thermal treatment, with priority use of energy,

- prohibit the incineration of untreated mixed municipal waste,
 - reduce waste disposal exclusively to those which cannot be recycled or recovered into solid fuel or thermally treated.
3. At the same time, adequate record keeping, reports, tracking and analysis of waste management data should be ensured, where necessary:
- upgrading of records from the Environmental Protection Register and the Waste Information System (certificates and permits issued, reporting on the generation, recovery and disposal of waste): monitoring, control and analysis of data and reports from debtors and holders of common systems.
4. Ensure Slovenia's autonomy in waste disposal and recovery of mixed municipal waste, taking into account the possibility of cooperation with other Member States due to the need for specialised disposal facilities for certain types of waste:
- implementation of the principle of self-sufficiency and proximity.

II. Specific objectives:

1. Specific objectives related to municipal waste:
- ensure, for municipal waste, compliance with the quantitative collection targets, preparation for re-use, recovery and disposal of municipal waste laid down by Community legislation,
 - ensure self-sufficient recovery of municipal waste and, in particular, self-sufficient disposal of mixed municipal waste,
 - to regulate environmental taxes in the field of municipal waste management;
 - system arrangements for determining the composition of mixed municipal waste,
 - system regulation of the financial guarantee of an equivalent measure for operators of 'municipal' landfills in closures and closed landfills,
 - system arrangements for the implementation of mandatory state and municipal public utilities in the field of waste management,
 - the introduction of public service payments under the system pays as much as you throw away,
 - regulation of the thermal treatment of municipal waste that is not suitable for recycling,
 - implementation of standards for revitalising the landfill area (exhumation of landfilled waste with the aim of obtaining new landfill space, extraction of secondary raw materials, soils and recovery of non-hazardous waste into solid fuel);
 - the regulation of administrative procedures for obtaining an environmental permit for environmental remediation in the landfill area, based on identified infringements with the aim of preventing the negative environmental impact of the landfill (e.g. if the warning change in groundwater parameters is exceeded);
 - ensure greater efficiency and transparency in the implementation of extended producer responsibility systems;
 - redefine the principle of extended producer responsibility and the resulting obligations of individual actors, including the obligations of the holders of common systems and the identification of resources and purposes for financing the systems;
 - redeploy the revenues and costs of the holders of common systems, including the obligation of uniform and publicly published service price lists for all participants in each common system, reporting this to the competent authorities and monitoring the veracity of their dissemination,
 - redefining the conditions for setting up joint systems, regulating the scope of their business, ownership links with waste collection and treatment companies,
 - records of producers,
 - identification of all household WEEE as waste category 20 in the list of waste,
 - awareness-raising and information support measures for the different target publics, as a priority for lightweight plastic carrier bags,
 - define the scope, frequency and types of activities of common packaging waste management systems to inform and raise awareness of the public, in particular end-users, on the purpose and targets for collection of packaging waste, the correct handling thereof, the possibilities for its free transmission, recycling and recovery, the definition of a uniform method of reporting on the actions carried out and the obligation to report on the costs of managing

packaging waste.

2. Specific objectives related to waste from industry and other activities:

- ensure that end-of-life vehicles which comply with waste regulations meet the end-of-life vehicle targets in accordance with Community legislation for end-of-life vehicles,
- ensure that the majority of asbestos-containing waste is safely disposed of by the end of 2030, through the management of waste containing asbestos in an orderly and transparent manner,
- continuation of activities for the safe disposal of PCB-containing waste,
- ensure a level playing field for the use of compost in agriculture as in other Member States, thereby ensuring a higher rate of recycling of biodegradable waste,
- the alignment of the statutory limit values for compost intended for use in agriculture with the maximum levels laid down in the legislation of other EU countries, namely: limit values for compost for organic use should be applied in accordance with Regulation 834/2007/EC on organic production and labelling of organic products,
- align the limit values for zinc and copper concentrations with the limit values used in the regulations of other EU countries;
- establish additional criteria for the environmentally sound use of digestate as fertiliser on agricultural land,
- tackling the problem of illegal waste dumping.
- identification of contaminated sites,
- drawing up a methodology for planning and implementing measures in areas of excessive load,
- drawing up action plans in areas of excessively congested environment,
- the introduction of appropriate financial measures to implement measures in areas of an excessively burdened environment.

3. Specific objectives related to construction waste and ground exhumation and mining waste:

- in the management of construction waste, pursue the objectives of the circular economy in such a way that in 2020 at least 70 per cent of its quantity will be prepared for reuse, recycling and material recovery, and provide for a higher degree of applicability for land excavations with prescribed criteria for a more transparent classification of the ground exhumation according to the pollutant content and the pollutant content of the leaching,
- the regulation of the use of recycled construction waste so that the criteria for determining the quality of recycled construction waste depend on the purpose and the way in which it is used.
- regulate the response to the remediation of contaminated sites and the means of remedial action,
- establish an inventory of installations producing waste from mining and which operators are required to obtain a permit for the management of waste from mining in accordance with the conditions laid down in Directive 2006/21/EC on the management of waste from extractive industries,
- on the basis of an inventory of installations producing mining waste, the competent administrative authority should ensure that environmental permits issued for the management of extractive waste are harmonised in accordance with the requirements of the Regulation on the management of waste from mining and other mineral extraction activities,
- regulating the use of recycled construction waste in such a way that the criteria for determining the quality of recycled construction waste depend on the purpose and method of its use,
- elaboration of materials to raise public awareness of the risks to health and the environment arising from the management of building waste containing asbestos and heating appliances containing asbestos,
- registration of any reconstruction or removal of works and maintenance on objects, installations and devices containing asbestos,
- the introduction of an appropriate financial mechanism for the management of waste containing asbestos,
- a more detailed overview of the procedures related to the preparation and use of artificially prepared soils.

3. Decree on Waste (OG 37/15, 69/15,129/20)

The Decree lays down rules of conduct and other conditions for preventing or reducing the harmful effects of waste generation and management and reducing the overall impact of natural resources and improving the efficiency of natural resources in accordance with Directive 2008 / 98 / EC. It applies to all waste, unless otherwise specified by a special regulation for a particular type or flow of waste. The Decree lays down the conditions and evidence under which the holder of the residual production may treat it as a by-product and not as waste. It is forbidden to leave waste in the natural environment. Waste paper, metal, plastic and glass must be collected separately.

4. Rules governing in more detail the treatment of waste or shipments of waste:

- Landfill Decree (OG 0/14, 54/15, 36/16,37/18 and 13/21);

The Decree lays down the criteria and procedures for the acceptance of waste at landfills with a view to the transition to a circular economy as soon as possible, lays down requirements to ensure the gradual reduction of landfills, in particular those suitable for recycling or other recovery, to be met by the waste to be disposed of, the rules of management and other conditions for the disposal of waste and the conditions and measures relating to the planning, construction, disposal and closure of the landfill and its post-closure management with a view to reducing landfill adverse effects on the environment, in particular due to the effects of pollution of surface water, groundwater, soil and air, and in relation to global environmental pollution, reduce greenhouse gas emissions and prevent risks to human health. in particular due to the effects of surface water, groundwater, soil and air pollution, and in relation to global environmental pollution, reduce greenhouse gas emissions and prevent risks to human health. It also lays down rules for the storage of mercury waste. The Decree also determines the rules of conduct and other conditions for the treatment of mixed municipal waste before disposal at a landfill.

- Decree on the emissions of leachate from landfills (OG 62/08);

The Decree provides specific requirements regarding the emission of substances in the discharge of leachate from landfills, namely: limit values for the parameters of the leachate and specific measures to reduce emissions of the substance.

- Decree on Waste Incineration Plants and Waste Co-incineration Plants (OG 8/16);

The Decree regulates waste incineration plants and waste co-incineration plants, it regulates:

- conditions for obtaining an environmental permit for operation;
- emission limit values for substances in the air and measures for the control of emissions of substances into the air;
- emission limit values for waste water discharges and measures to control the emission of substances for waste water discharges from waste gas treatment plants;
- waste and residue management rules;
- operating conditions;
- requirements for operational monitoring of emissions of substances into the air and emissions of substances during waste water discharge.

- The Decree on the implementation of Regulation (EC) No. 1013/2006 on shipments of waste (OG 71/07);

It lays down the competent authority and the procedures and arrangements for control of

shipments waste in respect of shipments of waste

- Regulation on the recovery of biodegradable waste and the use of compost or digestate (OG 99/13, 56/15 and 56/18);

The Regulation lays down rules of conduct and other conditions relating to the recovery of biodegradable waste and the use of compost or digestate and placing on the market of compost or digestate.

- Decree on soil pollution through the introduction of waste (Official Gazette of the Republic of Slovenia, OG 34/08 and 61/11);

The Decree lays down the conditions relating to the loading of soil with the introduction of waste and the obligatory conduct in the planning and implementation of the introduction of earth excavation or artificially prepared soil in order to improve the ecological condition of the soil. It also determines the conditions for the use of construction material prepared from treated or untreated, source or waste mineral raw materials, if hazardous substances may start to leach upon contact with rainwater, groundwater or surface water.

- Regulation on the use of sewage sludge in agriculture (OG 62/08);

It prescribes prohibitions and restrictions on the treatment and treatment of sewage sludge when used as agricultural fertilizer in relation to such use.

- Decree on the treatment of waste in mobile installations (OG 34/08);

This Decree determines the types of waste treatment that may be carried out in mobile waste treatment plants and the conditions for treatment in them.

- Decree on the recovery of non-hazardous waste into solid fuel and its use (OG 96/14);

The Decree lays down the conditions for the processing of non-hazardous waste into solid fuel and the conditions for its use in combustion plants, incineration plants and co-incineration plants.

- Waste Incineration Regulation (68/08, 41/09 and 8/16);

The Regulation says down measures, mandatory practices, prohibitions and other conditions for co-incineration and incineration of waste, as well as conditions and measures for the operation of waste co-incineration plants (hereinafter: co-incineration plants) and waste incineration plants.) with a view to preventing or limiting adverse effects on the environment, in particular pollution by emissions of substances into the air, soil, surface water and groundwater, as far as practicable, and consequently on the risk to human health.

5. Rules governing in more detail the management of individual types of waste:

- Decree on Waste Oils (OG 24/12);

The Decree lays down rules of conduct and other conditions for preventing or reducing the adverse effects of the generation and management of waste oils.

- Decree on the management of biodegradable kitchen waste and green garden waste (OG 99/13, 56/15 and 56/18)

The Decree lays down rules of conduct and other conditions relating to the recovery of biodegradable waste and the use of compost or digestate and placing on the market of compost or digestate.

- Regulation on the management of waste edible oils and fats (OG 70/08);
- The Decree on the management of waste arising from the conduct of health and veterinary activities and related research (OG 89/08);

- Decree on the management of amalgam waste arising from health activities and related research (OG 89/08);
- Decree on the Management of Waste from Construction Works (OG 34/08);

The Decree provides for the compulsory management of waste generated during construction works due to the construction, reconstruction, adaptation, renovation or removal of a facility.

- Regulation on waste management containing asbestos (OG 34/08);
- The Decree on the conditions under which materials containing asbestos may be disposed of in the case of reconstruction or removal of works and maintenance works on buildings, installations or devices (OG 60/06);
- The Decree on the Management of Waste from Mining and Other Mining Activities (OG 43/08 and 30/11);
- Decree on the Emission of Substances and Disposal of Waste from Titanium Dioxide Production (OG 64/14);
- Regulation on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (OG 34/08 and 9/09);
- Regulation on the implementation of the Regulation of the European Parliament and of the Council on persistent organic pollutants (OG 4/05);
- Regulation on the implementation of Regulation (EC) on the prohibition of exports of metallic mercury and certain mercury compounds and mixtures and the safe storage of metallic mercury (OG 95/10).

6. Rules governing compulsory public utility services:

- Decree on the obligatory municipal public utility service for the collection of municipal waste (OG 33/17 and 60/18);

The Decree determines the activity and tasks of the obligatory municipal public utility service of municipal waste collection (hereinafter: public collection service), the types of municipal waste subject to the public collection service and the minimum scope of supply standards and technical, maintenance, organizational and other measures and norms for the provision of the public collection service. It also determines the conditions for the direct delivery of municipal waste to a waste collector or waste treatment operator in accordance with the regulation governing waste.

- Decree on the manner of performing the obligatory state economic public service of municipal waste incineration (OG 123/04, 106/05 and 6/16);

The Decree determines the manner and subject of performing the obligatory state public utility service of municipal waste incineration (hereinafter: public service) in the territory of the Republic of Slovenia, conditions for providing and using public service, rights and obligations of users, sources of financing, procedure and the method of setting the price of public service and other elements important for the provision of public service.

- Decree on the manner, subject and conditions of performing the obligatory state economic public service of municipal waste incineration in the area of municipalities of the Savinjska region (OG 109/05, 62/08 and 6/16);
- Decree on the methodology for pricing the services of mandatory municipal public utility services for environmental protection (OG 87/12, 109/12, 76/17 and 78/19).

7. Rules governing extended producer liability in more detail:

- Regulation on packaging and packaging waste management (OG 84/06, 106/06, 110/07, 67/11, 68/11,18/14, 57/15, 103/15, 2/16, 35/17, 60/18, 68/18, 84/18, 54/21);
- Decree on waste electrical and electronic equipment (OG 55/15, 47/16, 72/18, 84/18,108/20);

Extended producer responsibility is also established for EEE, as provided for in the Waste Electrical and Electronic Equipment Regulation. Producers of EEE which they place on the market in Slovenia can also fulfil their obligations individually or collectively, and in practice, compliance with these obligations takes the form of common systems. The task of common extended liability systems for EEE producers is to ensure and finance the collection and regulatory treatment of waste electrical and electronic equipment from collection centres of public service providers and distributors (traders) of EEE. Distributors of EEE must accept WEEE from end-users if they are handed over by end-users when purchasing new equipment.

- Regulation on the management of batteries and accumulators and waste batteries and accumulators (OG 3/10, 64/12, 93/12 and 103/15);

The Regulation lays down rules for the management of waste electrical and electronic equipment it also prescribes the prevention or reduction of harmful effects of the generation and management of waste electrical and electronic equipment for the protection of the environment and human health and of reducing the overall impact of natural resources and improving their efficiency.

Extended producer responsibility applies to all types of waste batteries and accumulators, whether placed on the market alone or in appliances, vehicles or other products. Producers of batteries and accumulators should ensure, individually or within a common system, the collection, treatment, recycling and disposal of waste batteries and accumulators and the financing of these practices. In this context, end-users should be able to return waste batteries and accumulators at the point of sale (distributors), collectors must take waste batteries and accumulators from end-users, distributors and public service providers of municipal waste collection, and all separately collected waste batteries and accumulators must be treated and recycled in the prescribed manner. The disposal of waste automotive and industrial batteries and accumulators in landfills is prohibited.

- Regulation on end-of-life vehicles (OG 32/11, 45/11, 26/12, 84/18 and 101/20);

The Regulation lays down rules for the treatment of end-of-life vehicles. The purpose of this Regulation is to prevent the generation of waste from vehicles and to ensure the reuse, recycling and other recovery of end-of-life vehicles and their components with a view to reducing waste disposal and increasing the environmental performance of economic operators involved in the life cycle. Entities directly involved in the treatment of end-of-life vehicles.

The end-of-life vehicle regulation implements the principle of extended liability of manufacturers for motor vehicles of category M1 (for the carriage of passengers with no more than eight seats without the driver's seat included) and N1 (for the carriage of goods with a maximum mass of up to 3.5 t). In addition to the obligations relating to the design of vehicles (limiting the content of hazardous substances and taking into account the possibilities for dismantling, reuse and recovery, in particular for recycling), manufacturers must set up and finance the collection of end-of-life vehicles and the release of all acquired end-of-life vehicles for prescribed treatment or to ensure, together with processors, prescribed reuse and recycling or re-use and recovery rates. In accordance with the regulation, the treatment of end-of-life vehicles outside the system of extended producer responsibility in stand-alone end-of-life vehicle treatment facilities is permitted.

- Regulation on the treatment of end-of-life tyres (OG 63/09 and 84/18);

In order to ensure the environmentally sound management of used tires, this Regulation lays down rules for the collection and recovery of used tires, obligations relating to the placing on the market of tires and other obligations relating to the handling of used tires and used tires.

Extended manufacturers' liability applies to tyres for passenger cars, buses, lorries and trailers, motorcycles, two-wheelers, agricultural and commercial vehicles and machinery. Manufacturers of rubber (legal persons or sole proprietors who place rubber for the first time on the market in the territory of Slovenia) must ensure, at their own expense, the treatment of end-of-life tyres in order to collect all spent rubber incurred in Slovenia in a calendar year and to deliver all accumulated end-of-life rubbers for processing. The manufacturer may provide its obligation on its own or in conjunction with other producers if they represent a representative producer group. Compliance shall only take the form of a common compliance system.

- Decree on the Management of Waste Funeral Candles (OG 25/19);

The Decree lays down rules for the management of waste grave candles in order to ensure their separate collection from other municipal waste, including separately collected fractions of municipal waste, and their recycling and other treatment methods.

- The Decree on the Management of Waste Medicinal Products (OG 105/08 and 84/18);

The Decree lays down rules of conduct and conditions for the collection and disposal of unusable medicinal products and residues of medicinal products (hereinafter: waste medicinal products).

- Regulation on the management of waste plant protection products containing dangerous substances (OG 116/06 and 84/18);
- Intervention Measures for the Management of Municipal Waste Packaging and Waste Grave Candles Act (ZIURKOE);

8. Regulations governing environmental taxation for environmental pollution:

- Regulation on the environmental tax for environmental pollution due to the disposal of waste in landfills (OG 14/4);

The Regulation determines the basis for the calculation of the environmental tax, its amount and the method of its calculation and payment, taxpayers and payers of the environmental tax for environmental pollution due to waste disposal in landfills;

- Regulation on the environmental tax for environmental pollution due to the generation of packaging waste (OG 32/06, 65/06, 78/08, 19/10, 68/17 and 82/18);

The Regulation lays down the obligation to pay an environmental tax for environmental pollution resulting from the generation of packaging waste, the basis for calculating the environmental tax, its amount, taxpayers, environmental tax payers, the manner of its billing, assessment and payment. It also lays down the criteria and conditions for the refund of the environmental tax paid;

- Regulation on the environmental tax for environmental pollution due to the use of lubricating oils and fluids (OG 53/05 and 19/10);
- Regulation on the environmental tax for environmental pollution due to the generation of waste electrical and electronic equipment and waste portable batteries and accumulators (OG 84/18);

The Regulation establishes the obligation to pay an environmental tax for environmental pollution resulting from the generation of waste electrical and electronic equipment and waste portable batteries and accumulators, the basis for charging the environmental tax, its amount, those liable to pay the environmental tax, its payers, the method of its calculation, assessment and payment, and the criteria and conditions for the refund of the paid environmental tax. The environmental tax shall be paid due to environmental pollution due to the use of electrical and electronic equipment including portable batteries and accumulators, which are the source of electricity in this equipment, and due to the use of portable batteries and accumulators and WEEE and waste portable batteries and accumulators and is the revenue of the budget of the Republic of Slovenia.

- Regulation on the repeal of the Decree on the environmental tax for environmental pollution due to the generation of end-of-life vehicles (OG 32/18);

The Regulation establishes the obligation to pay an environmental tax for environmental pollution resulting from the generation of end-of-life vehicles.

- Regulation on environmental tax due to environmental pollution due to the formation of used tires (OG 32/06);

9. Other regulations affecting the waste management system:

- Regulation on the prevention and reduction of particulate emissions from construction sites (OG 21/11);
- Regulation on the Emission of Substances and Heat from Wastewater discharges into Waters and Public Sewerage (OG 64/12, 64/14 and 98/15).

10. Decisions:

- Decision on the determination of the amount of compensation and the unit of burden for the environmental tax for environmental pollution due to the generation of packaging waste
- Decision fixing the amount of the refund and the unit of burden for the environmental tax on environmental pollution due to the formation of used tires

- Decision on the determination of the amount of the environmental tax for pollution caused by the use of lubricating oils and fluids
- Decision on the determination of the amount of compensation and per unit of burden for the environmental tax for environmental pollution due to the generation of waste electrical and electronic equipment
- Decision on determining the shares of taking over packaging waste from public service providers for 2019
- Decision on determining the shares of fulfilment of obligations for which manufacturers of electrical and electronic equipment must ensure the collection and treatment of waste electrical and electronic equipment for 2018.

11. Rules

- Rules on the preparation of waste assessment before disposal and assessment of hazardous waste before incineration and on the performance of control chemical analysis of waste
- Rules on cadastres of economic public infrastructure of public environmental protection services

Annex 3: Further examples of projects and initiatives promoting and implementing CE

Indicative list of further initiatives, projects, research connected to CE

Table 18: Indicative list of project and good practices

Title	Content	Stakeholder
EU projects „Horizon 2020 – research, innovation and knowledge“		
MefCO2	The MefCO2 project is making methanol from captured CO ₂ using surplus electricity. Traditionally produced from natural gas, methanol is one of the most widely used chemicals in industry. The innovative method captures and processes waste CO ₂ and energy. It puts both to good use while preventing new emissions from methanol production, for a cleaner climate.	National Institute of Chemistry Slovenia
POLY CIRCULARITY – Waste as a source of secondary raw materials	The demo pilot project aims to develop innovative technologies for chemical and biochemical decomposition of packaging waste (plastic bottles) into high-quality secondary raw materials with added value for independent use (gases, chemicals, oils / fuels, etc.), or incorporation into new products such as biopolymers. It builds on innovative technology resulting from the Horizon 2020 project Resyntex. The project has strong emphasis on increasing public awareness of excessive plastic and textiles consumption, as well as new concepts of plastic/textile waste collection and treatment	Surovina (SME - lead), plus seven other SMEs and one NGO - European Cultural and Technology Centre Maribor (social enterprise)
ProSUM	Data on sources of secondary raw materials, which manufacturers could use as a complement to primary raw materials, is fragmented across Europe. The ProSUM project is developing an urban mine and mining waste secondary raw materials inventory that will make these resources easier to locate.	Geological Survey of Slovenia

ResCOM	The ResCoM project has developed an innovative framework to help industrial companies to design and implement closed-loop manufacturing systems. A life-cycle management software platform supports the framework. It analyses resource efficiency, CO ₂ production and energy use, as well as business and regulatory metrics, to recommend production processes that are both profitable and green.	Gorenje d.o.o.
RESYNTEX	RESYNTEX uses an innovative recycling approach to design a complete value chain for textiles. From waste collection through to the generation of new feedstock for chemicals and textiles, the project identifies ways to recycle unwanted textiles. This reduces the industry's environmental impact and promotes wider acceptance of products made from textile waste.	University of Maribor, Tekstina d.o.o.
REFRESH	The REFRESH project is focusing on reducing food waste, including packaging, by developing an innovative approach to understanding the drivers of food waste to support better decision-making by industry and consumers. The project will also guide legislators and policymakers towards more effective policy to counter food waste. The project's 'Framework for Action' model targets the entire food supply chain. This goes beyond existing initiatives to develop, evaluate and spread social, technological and organisational insights and practices related to food waste.	Jožef Stefan Institute (JSI), Slovenia
CINDERELA-circular economy business model	The project aims to develop a new Circular Economy Business Model (CEBM) for the use of secondary raw materials in urban areas, connecting different industries and the general public with the support of CinderOSS, a "One-Stop-Shop" service, articulated in (i) an on-line ICT platform (ii) production and marketing of (SRM) based construction products and (iii) building with SRM based construction products supported by building information modelling. Different streams of waste will be exploited in the project. Their suitability for use for building materials will be demonstrated through a large scale of demonstration activities, one also in Maribor. The project will contribute to 20% reduction of environmental impacts along the value and supply chain, reducing virgin material exploitation and converting wastes to products. Sustainability of CEBM will be proven with the environmental, economic and social assessment through whole life (LCA, LCC and S-LCA).	Institute for Construction of Slovenia, NIGRAD Municipal company,
EU LIFE Projects		
LIFE Turn to e-circular	The project is aimed at conservation of resources through expansion of the company's core activity. Company ZEOS is a national non-profit WEEE management scheme, with this project they want to divert as much of e-waste as possible back in to use, being it whole appliances or its components.	ZEOS, electrical and electronic equipment handling, d.o.o.

	<p>To achieve this goal, the perception of consumers and stakeholders, involved in electronics management chain, must be altered. Raising awareness of local target groups and stakeholders on the concept of circular economy (CE) is an important part of the project, however coupled with implementation of appropriate infrastructure, legislative support and business solutions it has a much bigger effect. establish a network of e-equipment collection points at local collection centres, coordinated guidelines for directing this equipment back in to reuse, reuse preparation and refurbishment for spare parts, an online circular economy forum as a junction point for users, manufacturers, service providers, equipment processors, sharing and garage sales promoters with video content for servicing and simple repairs and application for directing users in appliance diagnostics and also links to sales platforms. Another component is production of a mobile repair shop in order to bring repairs closer to the local environment.</p>	<p>Chamber of Commerce and Industry, waste collection and transportation company TSD</p>
<p>LIFE E-WASTE GOVERNANCE – Governance of Waste EEE (WEEE) and Waste PBA (WPBA) Flow and Consumer Friendly Collection and Awareness Raising</p>	<p>To reduce the environmental impact of waste EEE (WEEE) and waste portable batteries and accumulators (WPBA), a high level of separate collection is essential. However, WEEE and WPBA collection in Slovenia has lagged behind the collection target set by the European Union. The beneficiary has established, with the Ministry of the Environment and Spatial Planning, a system for the collection and further treatment and recovery of WEEE and WPBA. However, there is still significant potential for increasing collection rates in Slovenia and much more effort could be put into raising awareness of this potential. This project is a follow-up to the Slovenia WEEE campaign (LIFE10 INF/SI/000139). One of the main conclusions of that project was that only continuous work in a long run can achieve the best results in changing people’s behaviour.</p>	<p>ZEOS, electrical and electronic equipment handling, d.o.o., the Ministry of the Environment and Spatial Planning</p>
<p>REBIRTH – Promotion of the Recycling of Industrial Waste and Building Rubble for the Construction Industry</p>	<p>The objective of the REBIRTH project was to increase and improve the recycling of industrial and construction/demolition waste for use in the construction sector. This aim would be achieved by communication and open dialogue activities aimed at raising awareness of these recycling possibilities at national, regional and local level. The project planned to raise awareness of the quality of the materials obtained from industrial, construction and demolition waste, as well as the economic benefits of recycling as opposed to extracting new raw materials. It aimed to highlight the environmental benefits of reducing the amount of new raw material extracted and the amount of waste sent to landfill or dumped illegally. The project would favour channels of communication open to professionals, state and local authorities, and the general public. It would also highlight legal issues around the correct disposal and recycling of waste and draw attention to the economic opportunities around the growth of new environmental goods and services. The project also planned to place particular emphasis on disseminating best practice from other EU countries. It</p>	<p>Civil Engineering Institute of Slovenia, Chamber of Commerce and Industry of Slovenia; PKG Sprinzer Mirko s.p.; Slovenia KLARO spletna agencija d.o.o.; Slovenia Mayer McCann d.o.o.; Slovenia Structum,</p>

	would provide practical demonstrations on current technologies and information on successful administrative measures and tools to promote their use, such as green public procurement, environmental taxes and charges.	razvoj trajnostnega gradbeništva, d.o.o.
SEPARATE COLLECTION – Communication about the environmental benefits of separate collection and recycling of municipal waste	<p>The SEPARATE COLLECTION project's overall objective is to increase the recovery and recycling of household waste, in line with European and Slovenian legislation. This will be achieved through communication campaigns, demonstration activities, competitions and debates to raise awareness of how and why waste should be separately collected.</p> <p>The project will work to raise public awareness that the separate collection of municipal waste creates environmental benefits. It will also seek to promote the market for recycled products and the creation of new products from recycled waste, by highlighting the quality of recycled goods to the general public.</p>	Slovak Waste Packaging Management Company d.o.o., Delo d.d.
BioTwine HOP waste transformation into novel product assortments for Packaging and Horticulture Sector	The aim of the this project is to replace the PP twine on the hop fields with the biotwine made of renewable material polylactic acid (PLA), that can be degraded by composting to simple monomers (H ₂ O, CO ₂ and biomass). Hop plant biomass after harvest can be used as main ingredient of composting and afterwards used as a natural fertiliser or material to produce biodegradable products (bio-composites, planting pots, and packaging trays). Therefore, the agro-waste can be drastically reduced and the economy of the sold agro-waste to bioplastic producers can be increased. The demo region, which is Lower Savinja valley in Slovenia, will be an example of good practice for all hop-growing regions not only in EU but also across the world. The project will also benefit in socio-economic value as it can improve the green or so called eco-tourism.	Slovenian Institute of Hop Research and Brewing Slovenian Technological centre TECOS and Development Agency Savinja
LIFE CEPLAFIB – Implementation of a new Circular Economy through the valorisation of postconsumer Plastic waste and reclaimed pulp Fibre	LIFE CEPLAFIB project will transform two post-consumer wastes: urban plastic waste and newsprint paper, into novel primary resources for high added value applications through their combination in novel recycled fibre reinforced composite materials. It will demonstrate that by using the cost-efficient technologies for plastic & paper waste sorting, selection, treatment and transforming processes we can boost the linear economy of recycled materials into circular transition, where plastic waste and newsprint residues seeks their new utility values in the form of composite material for mass production applications. LIFE CEPLAFIB aims to orchestrate a new circular economy in which recycled postconsumer plastic will be reinforced with re-claimed pulp fibres to improve their end performance characteristics and to stabilize the recycles flows for their direct use in mass application sectors, i.e. automotive, caravanning, packaging and construction. These new products	TECOS, Slovenian Toolmaking Development Center, Adria Mobil (Slovenia), OMAPLAST reciklaža plastike d.o.o. (Slovenia)

	will be rigid industrial packaging, interior components for recreational vehicles (RV's), and building isolation panels. To guarantee the maximum efficiency, LIFE CEPLAFIB will use a global synergistic approach to drive changes, combining different manufacturing technologies and applications and is focused in complementary roles of diversified industrial sectors.	
LIFE for Acid Whey – Reuse of waste acid whey for extraction of high added value bioactive proteins	In the light of the current EU goals for establishing a circular economy and clean technologies, the project demonstrate several innovative approaches for further whey processing. The primary focus will be on demonstrating the separation process of individual whey proteins (e.g., lactoferrin). In pilot experiments, we will also test other possibilities of beneficial use of acid whey, such as the production of dairy starter cultures, the production of vitamins, the separation of residual lactose, lactate and whey proteins, and the production of energy	ARHEL projektiranje in inženiring d.o.o.
LIFE HIDAQUA – Sustainable water management in high water demanding industries	The main objective of the LIFE HIDAQUA project is to demonstrate a sustainable water management approach in industry like Hidria factory, which is one of the leading European corporations in the production of automotive components. Furthermore, the project will demonstrate a sustainable water treatment system for simultaneous recycling/reclamation of industrial wastewater and the exploitation of alternative water sources (brackish and storm water). Electrodialysis technologies, filtration with recycled reverse osmosis membranes and advanced Decision-Making Tool for the design and selection of the most optimal alternative water management solutions will be used	Slovenian National Building and Civil Engineering Institute, Inštitut Jožef Stefan
LIFE RusaLCA – Nanoremediation of water from small waste water treatment plants and reuse of water and solid remains for local needs	The project will test an innovative nanoremediation process to treat urban wastewater and to recycle sludge as different types of composites. This new zero solid waste process will target household wastewater that is too polluted to be released into surface waters. The treated water will be used for secondary purposes in households and for common public needs.	Civil Engineering Institute of Slovenia, Esplanada d.o.o., Slovenia; Jozef Stefan Insitute, Slovenia; Občina Šentrupert, Slovenia; Structum d.o.o., Slovenia; Vekton d.o.o, Slovenia; Institute of Public Health Novo mesto, Slovenia

UNISASH – Resource efficient, Universal Window Sash	<p>The project set out to design a new, environmentally-friendly manufacturing process for window frames, and to develop a prototype for a universal window sash (or panel). The prototype was designed to be suitable for production using PVC, wood or aluminium.</p> <p>The beneficiary planned to reduce consumption of raw materials by 20-35% for each window unit. This should equate to a reduction in energy consumption of 20-40% per unit. These environmental benefits were also expected to reduce manufacturing costs.</p>	KOVINAPLASTIKA LOŽ - metal and plastic products industry d.d.
USE – REUSE Project: establishing REUSE centers network	<p>The purpose of the project is to extend the already developed practice of establishing conditions for the operation of the REUSE center, the purpose of which is the processing and reuse of waste, to the regional level. Seven new REUSE centers (social enterprises) will be created. The project will establish the conditions for the creation and operation of a network of REUSE centers, which will enable the employment of the target group of unemployed people in the newly created green jobs: the promoter of the reuse center and the coordinator of the network of these centers.</p> <p>Co-financing: Ministry of Labor, Family, Social Affairs and Equal Opportunities and the European Social Fund</p>	Project partners: Technology Center for Applied Ecology doo, Association of Ecological Movements of Slovenia
Existing initiatives containing elements to promote CE		
THE LUŠT TOMATO – biotechnical method of cultivating tomatoes	<p>The Paradajz d.o.o. project was designed with the aim of reducing imports of low-quality tomatoes from abroad. Using state-of-the-art production technologies which, at the same time, also have minimal environmental impact, the company wanted to avoid highly intensive production</p> <p>They developed their own, i.e. a biotechnical method of cultivating tomatoes. They developed their own recognizable LUŠT brand that generates very good tomato sales despite their slightly higher prices. They are available in recycled paper packaging which is recycled again after use.</p>	
ROBIN FOOD – entrepreneurial project that reduce the amount of food waste	<p>It is an entrepreneurial project created with the help of the Slovenian Enterprise Fund. The aim of the project is to reduce the amount of food waste. The project consists of for-profit and non-profit activities. The for-profit part is directed at stimulating the promotion of food circulation by in-store sales. The non-profit activity is focused on the organisation of food donations for humanitarian purposes using the already established distribution networks of partner organisations. Robin Food is an alternative sales channel that ensures that a smaller amount of edible foods ends up as waste. At In the store you can buy excess food, food right before its expiry date, or food with damaged packaging at affordable prices. One of the</p>	

	<p>activities of Robin Food was also the offer of unique, healthy and nutritional dishes that were prepared daily for the guests of their own restaurant.</p>
<p>CELCYCLE – utilisation of biomass as a renewable raw material resource</p>	<p>The CELCYCLE project, coordinated by the Pulp and Paper Institute focuses on utilisation of biomass as a renewable raw material resource at an advanced level. It consists of 21 partners coming from the entire value chain, of which 12 companies operate in the field of paper, chemical, textile, wood and automotive industries, construction, engineering and energy, while nine are research organisations. It represents a model example of the introduction of a circular economy, the partnership action involving a multitude of stakeholders with the objective of efficient utilisation of local production resources and thereby the implementation of the circular bio-economy in Slovenia. A comprehensive value chain for the cascading use of biomass has been established, and activities are carried out in several stages: i.e. the development of new bio products (nano-cellulose and green chemicals); advanced and multifunctional materials with integrated nano-cellulose (paper, cardboard, yarn); new products with bio-based components in branches such as automotive, construction and textile industries; the development of processes for the biological and mechanical processing of solid bio-waste and new systems for the use of biomass as an energy product.</p>
<p>MANUFACTURING INDUSTRY - Slovenian Steel Group – utilization of secondary raw materials</p>	<p>The Slovenian Steel Group (SSG) d. d., is the largest Slovenian steel producer and one of our main exporters. Production is entirely based on the principles of circular economy. Steel scrap as a basic raw material is collected in own collection warehouses in Serbia, Croatia, Bosnia and Herzegovina, and Slovenia. With secondary raw materials collected in this manner, Slovenia produces superior niche steels. All metal by-products are separated and reused in the production of steel. Slag stands out among the by-products that are processed and used in asphalt mixtures in terms of volume. SSG is intensively devoted to the projects of taking advantage of useful (waste) heat for district heating. In 2016, the partners SIJ Metal Ravne, Petrol Energetika, the Jožef Stefan Institute and the Ravne na Koroškem Institute presented an integrated energy solution with an innovative and award-winning example of a transition to a circular economy. It is based on the exploitation of waste heat generated during metallurgical processes for district heating and hot water preparation in the area of Ravne na Koroškem. In 2016, approximately 21 per cent of all the heat required to heat the city was generated in this way, and the amount of greenhouse gases was reduced by 1,500 tonnes per year, and with this model they also reduced the on-site consumption of electricity.</p>
<p>AQUAFIL – utilization of recycled raw material for the production of textile products</p>	<p>Aquafil, an international group based in Italy, which has its own factories in Slovenia, is one of the leading European and global manufacturers of synthetic fibres for textile floor coverings and clothing (swimwear, sportswear, etc.). At the Ljubljana-based factory (AquafilSLO) they produce recycled raw material for the production of ECONYL® fibres from waste, including waste fishing nets, parts of textile floor coverings and industrial waste. ECONYL® is a 100% recycled nylon and is a global innovation. The fibres are comparable to nylon made from primary raw materials in terms of quality. Aquafil has also</p>

	<p>invested a lot of effort and assets into the creation of a new supply chain, the search for appropriate waste streams, the establishment of cooperation with aquaculture and fishery organisations, the organisation of the transport of waste materials from one country to another and the separation of different materials. Aquafil underlines that "in the circular economy, in addition to research and development, cooperation is also an essential factor; the whole value chain must think and act in harmony".</p> <p>The Healthy Seas Project for the reduction of marine pollution with discarded fishing nets is included in the circular forms of cooperation.</p> <p>The industrial symbiosis-usage of excess heat is established by the cooperation between AquafilSLO in Ljubljana and the Atlantis Water City (BTC d.d.). The companies have set up a unique example of industrial symbiosis where excess heat generated during the ECONYL® process in Ljubljana acts as a source of heating for swimming pools, saunas and sanitary water in the Atlantis water park.</p>
<p>SHARING – Stocktaking and assessment of typologies of Urban Circular Collaborative Economy initiatives</p>	<p>This project is looking at Urban Circular Collaborative Economy which is a global phenomenon with strong local characteristics. Commercial digital platforms (e.g. Uber and AIRBNB), as well as activist grass-roots initiatives (e.g. Transition Towns), are susceptible to local cultural dimensions. By gaining a thorough understanding of these initiatives, their cultural context, and relevant multilevel policies, evidence based policy options can be identified, and place-based strategies can be developed to provide appropriate support to these dynamics. This Targeted Analysis activity will contribute to better understand how Urban Circular Collaborative Economy initiatives are being implemented in different EU cities and how they are influenced by regulations at different levels of government, from the local to the national and the EU. The main objective is to identify and categorize different types of implementation, approaches, and strategies to enable other cities to learn from those who are taking the lead as well as develop a 'common language' across Europe. The project will also provide recommendations on how the Collaborative economy can be better understood, communicated, shared, and implemented across Europe.</p>
<p>URGE (circUlaR buildinG citiEs) (URBACT network)</p>	<p>The project aims to design integrated urban policies on circularity in the building sector – a major consumer of raw materials – as there is a gap in knowledge on this topic. The result is an in-depth understanding of this theme and a first plan for a tailor-made methodology that allows the circular dimension to be widely integrated in the large construction tasks the URGE partnership is facing. URGE thus accelerates the transition towards a circular economy. Urge wishes to address a specific challenge - how cities can develop next generation urban resource centres that fit with the priority of the waste hierarchy, promote the circular economy and invite citizens, new businesses and start-ups to co-create new ways of closing the resource loops at local level in an economically sustainable way.</p>

URBAN SOIL 4 FOOD project	<p>The project starts from the challenge of using cities 'waste (biological and mineral) to produce soil, which could later be used for meeting different needs of the city, such as food production, park maintenance and construction. As the main innovative output of the project, project partners will develop safe and certified soil by energy production (by using technology of fermentation and pyrolysis). The project will be articulated around four circles (material, food, open innovation, knowledge) and backboneed with two key investments: the establishment of a pilot system for urban soil production and the establishment of urban gardens. The material circle will analyse the material flows of waste within the city that are usable for production of urban soil. The knowledge circle will share the knowledge stemming from the project to other cities in Slovenia and in the EU, ending with development of certificates and patents in order to bring urban soil technology to an international level.</p>
Europe Project WINPOL (Interreg)	<p>The public waste management company Snaga d.o.o is a project partner together with eight other international partners. Within this project we will provide good practices about the use of intelligent systems in waste management discussed between and beyond project partners (pay as you throw). Furthermore - based on case studies in the second phase - results in form of programs, strategies and local decrees and nevertheless financial sources are going to be set.</p>