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PART I: CIRCULAR ECONOMY
1. Circular economy: brief outlook of current situation

The circular economy is a fundamental change in the traditional economic model, and an important way to change economic growth pattern and achieve the balance among economy, resources and 467 environments. Circular economy through ecodesign, waste prevention and increased reuse and recycling of products, provides that value of products, materials and resources is maintained in the economy for as long as possible.

The most used definition for circular economy is that “it is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extracting the maximum value from them whilst in use, then recovering and reusing products and materials. Examples of circular business models include designing products to last longer, which can lead to greater reuse and greater ability to repair/refurbish and re-sell products to support growth in the remanufacturing industry; and allow for easy recovery of materials when a product is eventually recycled. Service models, which could include product maintenance and take back schemes as well as rent/lease and peer-to-peer sharing models, also hold much potential”.

Having in mind this definition, here are the reasons why a circular economy is important?

As well as creating new opportunities for growth, a more circular economy will enhance to:
- reduce the waste
- drive greater resource productivity
- deliver a more competitive national economy.
- position the host country to better address emerging resource security/scarcity issues in the future.
- help to reduce the environmental impacts of host production and consumption (in both - the host country and abroad).
2. Resource efficiency and circular economy: current strategies and efforts in EU

EU Regulatory packages for Circular economy

2014 European Commission decided to define proposals

In December 2014 European Commission decided to define proposal to amend the waste legislation, at the same time deciding to work on a new "package", which should include a full economic cycle, not just targets for waste reduction.

2015 European Action plan

European Action plan for the Circular Economy was adopted on conference held on 25 June 2015 in Brussels organized by European Commission, attended by around 700 stakeholders. Participation in this conference was open to all stakeholders wishing to contribute to shaping European economic policy making. The European Commission adopted an ambitious Circular Economy Package, which includes measures that will help stimulate Europe's transition towards a circular economy, boost global competitiveness, foster sustainable economic growth and generate new jobs.

The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a concrete and ambitious program me of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials and a revised legislative proposal on waste. The annex to the action plan sets out the timeline when the actions will be completed.

The proposed actions were concentrate in direction of contribute to "closing the loop" of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy.

The revised legislative proposals on waste set clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling. Key elements of the revised waste proposal included:

- A common EU target for recycling 65% of municipal waste by 2030;
- A common EU target for recycling 75% of packaging waste by 2030;
- A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified and improved definitions and harmonized calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material and
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes for packaging, batteries, electric and electronic equipment's, vehicles).
2017 Circular Economy Stakeholder Platform

In framework of efforts to create activities for develop circular economy system on 9-10 March 2017 in Brussels was held Circular Economy Stakeholder Conference. On Conference was appointed showcase of the key deliverables achieved so far and in same time debate future deliverables with stakeholders. The European Circular Economy Stakeholder Platform is a virtual open space which aims at promoting Europe’s transition to a circular economy by facilitating policy dialogue among stakeholders and by disseminating activities, information, and good practices on the circular economy. Stakeholders can take part in the Platform by participating in the annual conference and by interacting on the website to look for good practices, to engage with other stakeholders and to share their own good practices and events.

The members of the Coordination Group contribute to gather best practices on circular economy, to raise awareness about existing national, regional or local strategies, to identify challenges and opportunities for the transition to a circular economy among policy makers, businesses, trade unions, civil society, etc.

2018 Circular Economy Package

As part of its continuous effort to transform Europe’s economy into a more sustainable one and to implement the ambitious Circular Economy Action Plan, in January 2018 the European Commission adopted a new set of measures, which include:

A Europe-wide EU Strategy for Plastics in the Circular Economy and annex to transform the way plastics and plastics products are designed, produced, used and recycled. By 2030, all plastics packaging should be recyclable. The Strategy also highlights the need for specific measures, possibly a legislative instrument, to reduce the impact of single-use plastics, particularly in our seas and oceans. A public consultation was open until 12th February 2018. To reduce the leakage of plastics into the environment, the Commission has adopted a new proposal on Port Reception Facilities, to tackle sea-based marine litter and published a report on the impact of the use of degradable plastic, including degradable plastic carrier bags, on the environment.

A Communication on options to address the interface between chemical, product and waste legislation that assesses how the rules on waste, products and chemicals relate to each other.

A Monitoring Framework on progress towards a circular economy at EU and national level composed a set of ten key indicators which cover each phase – i.e. production, consumption, waste management and secondary raw materials – as well as economic aspects – investments and jobs - and innovation.

In April 2018, the EU Parliament formally adopted a new set of laws aimed at preventing waste generation and increasing recycling (after confirmation by environmental ministers of all member states will have 24 months to transpose them into national legislation).

The news are, as follow:

- Degree of recycling of municipal waste (55% by 2025, 60% by 2030, 65% by 2035);
Maximum 10% waste will be disposal on landfills until 2035; Special collection of bio (degradable) waste and More stringent scheme for the collection of critical recyclable waste will be paid by the waste producer (polluter pay principle).

The Europe 2020 Strategy is therefore a prerequisite for smart, sustainable and inclusive growth.

The circular economy development initiatives create new challenges and draw up the new perspectives. At the base of circular economy is life cycle thinking. Life cycle thinking means recognizing the various impacts that occur at all points along the life cycle of the product or material. It also means recognizing how certain choices – materials used, manufacturing process, energy sources, distribution channels, disposal possibilities – influence those impacts. In practice, life cycle thinking means evaluating the potential influences as part of the decision making process (UNEP, 2007). Life cycle thinking is a broad concept that facilitates an integrated assessment of the benefits and the burdens in terms of environmental, social, and economic aspects, for specific products and regions, etc. The application of life cycle thinking requires specific methodologies. Therefore, circular economy is a very complex issue, involving resource extraction, transportation, production, consumption, distribution, waste management, social norms, biological and technological cycles etc. For developing of circular economy is necessary to explore the theory of circular economy and possible practical implementation, but to drive broader changes it is critical to collect and share data, spread best practice, invest in innovation and encourage consumers with adequate green product information. The purpose of each country is to investigate basic principles and nature of circular economy, problems for the transition to a circular economy and to propose relevant policies, possible solutions and constructive mechanism of promoting circular economy. The results of the research show that circular economy implementation milestones are: legal framework, administrative conditions, economic instruments and public education and awareness.

2.1. Economic arguments for circular economy in Europe

Together with environmental benefits, a growing circular economy offers substantial potential to create jobs through lowering structural mismatch in high unemployment regions in Europe. Development of a circular economy involves a major industrial transformation. Past industrial transitions and the focus on labour productivity have often involved using less labour, creating high unemployment in some regions and countries or for some categories of workers. By contrast, the growth of the circular economy can involve using more labour and fewer resources to increase the efficiency of economic activity. Therefore, integrating the labour market impacts of a growing circular economy into the overall labour market is important as it also allows a distinction between net or additional job creation and gross jobs where vacancies are filled by people moving from existing posts. The report also discusses developing metrics that measure economic productivity relative to material inputs, rather than solely focussing on labour or energy, so that circular economy principles are more likely to become embedded in business thinking.
Europe faces substantial economic and environmental challenges in its use of labour and scarce natural resources. In 2014, unemployment had risen in every single European country apart from Germany compared to 2008 when the financial crisis began. There are signs that employment is recovering and unemployment is starting to show signs of stabilisation (or is falling in some countries across Europe), but unemployment remains sharply higher in many countries, particularly for certain occupational types and age groups. Linking increasing resource efficiency and growth in circular economy offers a potential for the creation of net jobs that can reduce unemployment and offer long lasting benefits to the performance of labour markets in Europe.

A circular economy create economic value with more labour and fewer resources, therefore growth in circular economy can potentially deliver economic benefits such as:

- employment creation,
- lower structural unemployment and
- increased materials productivity.

The importance of an expansion in circular economy activity stems from the observation that across Europe there are substantial economic and environmental challenges in the way its economies utilise labour and scarce natural resources. In 2014, unemployment had risen in every single European country apart from Germany compared to 2008 when the financial crisis began. There are signs that employment is recovering and unemployment is starting to show signs of stabilisation (or is falling in some countries across Europe), but unemployment remains sharply higher in many countries, particularly for certain occupational types and age groups. Together with substantial environmental benefits, a growing circular economy offers the potential to create jobs through lowering structural mismatch in high unemployment regions in Europe. Growing circular economies create economic value using more labour and fewer resources thereby increasing the efficiency of resource use and economic activity. Integrating the labour requirements of a growing circular economy into the overall labour market is important; it also allows a distinction to be made between net or additional job creation and gross jobs creation where vacancies are filled by people moving from existing posts.

Current employment in Europe in circular economy activities (in the repair, waste and recycling, rental & leasing sectors) is estimated to be at least 3.4 million. Of this total 1.2 million jobs are in repair of machinery & equipment, 400,000 jobs are in repair of computers, personal and other household goods, 700,000 jobs are in waste collection, treatment & disposal activities, 300,000 are employed in the recovery of sorted materials and the wholesale of waste and scrap, 100,000 jobs are in in-store retail of second hand goods and 600,000 people are employed in rental & leasing activities. An expansion in circular economy activity appears to offer the potential to create jobs across Europe through reducing cross country differences in unemployment: indicators of current employment in circular economy activities are broadly in line with the distribution of total employment across Europe and other measures of the propensity for countries to specialise in “circular economy” activities together with patterns in the geographical distribution of these activities illustrate a reasonable potential for European countries to benefit from expansion in circular economy. And, there is a strong potential for an expansion in circular economy in Europe to offer jobs in mid-level occupations where there has been a decline in the number of posts offered. As
an illustration of this potential, an indicative quantification from the analysis in this report, which envisages a continuation of the current development path towards circular economy in Europe, shows that the potential labour market impact in Europe by 2030 is to create 1.2 million
jobs with a reduction in unemployment in Europe by around 250,000 (Figure 1). Inevitably there are considerable uncertainties around such estimates; in particular future advancements in technology could substantially change this picture.

Figure 1. Potential jobs created in Europe through expansion in circular economy activity to 2030

2.1.1. Resource efficiency in Europe

The proportion of recovered materials (biomass, metals & minerals but excluding fossil fuels) in use in the European economy has been increasing over time. Between 2004 and 2012 material consumption reduced by around 800 million tonnes (biomass, metals & minerals and excluding fossil fuels), the amount of material recycled increased by 163 million tonnes and net imports of materials reduced. Over the same period the economy expanded by 8% and the population grew by around 3%. Figure 1 suggests that while domestic material consumption and net imports have fallen since 2008, the proportion of materials recovered from waste in total has increased. An indicator of circularity (the amount of materials recovered from all waste streams relative to the domestic consumption of materials) suggests that Europe is currently around 20% ‘circular’ in its materials use compared to 15% in 2004. A similar trend is also apparent in measures of raw material consumption (Eurostat, 2014).

There’s a growing evidence base documenting the evolution of resource efficiency and recycling in Europe and the associated expansion of jobs in the recycling sector as recycling rates have increased. The economy has become more circular as it has expanded, it is using fewer extracted or imported resources and more resources from materials recovered from its waste streams. Fischer et al (2011) discuss the extent to which the increase in recycling has led to the creation of permanent jobs across the European economy. In 2007 there were 301,000 people in Europe employed in the recycling sector compared with 177,000 in 2000 -
an increase of 70% - and which equates
to an annual increase of 8% with many of the jobs created being for people with relatively low skills.

Figure 2. Domestic material consumption and an indicator of circularity for the EU

2.1.2. Moving forward through circular economy: European labour market
Recent evidence for Europe shows that skills mismatch is a significant explanatory factor contributing to a worsening in labour market performance, and moreover the explanatory power of skills mismatch has increased since the financial crisis (European Commission, 2013). Another important factor appears to be a lack of redeployment opportunities for displaced low-skilled workers, as evidenced by the growing disparity between the skills of the labour force and the skills required by employers at a regional, country and Euro area level where job losses have been strongly concentrated among low skilled workers. In the short run, if unemployment in any country is above the NAIRU (Non Accelerating Inflation Rate of Unemployment) then a growing sector might help speed the adjustment towards it through creating additional jobs, at least for a period of time. However, it would not permanently raise or lower unemployment as market forces would eventually have returned unemployment to its NAIRU level anyway ie its equilibrium level. So if market forces driving the return to the NAIRU are strong, then the short term may not be a very long time – perhaps up to one to two years. By contrast, if these equilibrating mechanisms are weak, then it may take many more years before unemployment returns to the NAIRU. Hence, even short term net job creation may offer significant benefits for a substantial period of time. However, In the long run, the only way a growing sector can permanently create net or additional jobs is if it can lower the NAIRU itself.

Since the financial crisis that began in 2008 there has been a great deal of attention to the impact on employment and unemployment across Europe. Currently, the unemployment rate in Europe is around 10% of the labour force and there are 25 million people out of work (Figure 3). At the same time the experience of unemployment is (and has been) very different across European countries. There are substantial variations in the level of economic activity, and in employment and in unemployment levels across Europe (Table 1). Following the financial crisis that began in 2008 unemployment
increased in all countries across Europe, and in most countries it remains substantially higher, Germany is the only country where unemployment today is below its level in 2008. The highest unemployment rates are in Greece (26%) Spain (24%) and followed by Croatia (17%), Cyprus (16%), and Portugal (14%). Countries with the lowest unemployment rates are Germany (5%), Austria (6%), Malta (6%), the Czech Republic (6%), and the United Kingdom (6%).

Figure 3. Dispersion of unemployment rates across Europe

Table 1. Dispersion of labour market activity employment and unemployment by European nation, 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>Economically active</th>
<th>Employment</th>
<th>Unemployment</th>
<th>Economically inactive</th>
</tr>
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<tr>
<td></td>
<td>000s</td>
<td>%</td>
<td>000s</td>
<td>%</td>
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<td>4,357</td>
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<td>4,544</td>
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<td>Job Destruction</td>
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<td>EU28</td>
<td>242,562</td>
<td>73.9</td>
<td>217,768</td>
<td>66.4</td>
</tr>
</tbody>
</table>

Source: Eurostat Labour Force Survey

### 2.1.3. Mapping jobs in circular economy activities in Europe

The mapping describes the circular economy activities. In terms of the mapping for this employment indicator, re-use employment is proxied by employment in the retail of second hand goods sector, employment in repair activities by employment in the repair of machinery and equipment sectors and the repair of electronic and household products sector, closed & open loop recycling activity is proxied by employment in the wholesale of waste and scrap sectors and the waste and recycling sector, and for circular economy activity relating to servitisation jobs are proxied by employment in the rental & leasing sectors. To get an idea of the current size of the circular economy across Europe a proxy indicator of employment is constructed using official employment data from Eurostat disaggregated to the level of detailed business activities. It also serves as an indicator to establish broad trends and track progress in employment in businesses currently operating in sectors with a high propensity towards circular economy activities, namely the repair, reuse, remanufacturing, recycling and rental & leasing sectors.

Table 2. Mapping employment in circular economy activities to official data
| Circular economy activity | Sector proxies in official data |
Closed and open loop recycling – processes that create new products from waste without changing the inherent properties of the material. For example, recovering PET from bottles for use in other PET applications. Open loop recycling – also referred to as downcycling, is where recovered materials are used to create products with lower value, for example, use of glass containers as aggregate.

Aggregate
Repair/remanufacturing - where products need repair or reconditioning before going back into use. Remanufacturing preserves most value.

Reuse - examples include electrical & electronic goods and textiles. These products are worth more than the raw materials they are made from. A reused iPhone retains around 48% of its original value compared to just 0.24% of its original value as recyclate.

Servitisation – examples are systems and business models that make more effective use of assets including leasing products and provision of products as services thereby deferring consumption of new assets. Many examples are B2B (business to business) such as Xerox and Ricoh leasing copiers and printers, Interface’s carpet business or Philips ‘pay per Lux’ but there are B2C (business to consumer) and C2C (customer to customer) examples such as Airbnb or Streetcar.

Wholesale of waste & scrap
Waste & recycling

Repair of machinery & equipment
Repair of electronics & household goods

In-store retail of second hand goods
Renting & leasing activities
The results of applying this approach to each of the European Member states (and aggregated to Europe) are summarised in Figure 5 which reports proxy indicators of employment levels (in aggregate) in each of the broad areas of employment in circular economy activities aggregated for the EU28 countries. In total, European employment in repair, waste and recycling and rental & leasing activities is estimated to be around 3.4 million across Europe, with 1.2 million of these jobs located in the repair of machinery & equipment sectors. Of the remainder 0.4 million jobs are in repair of computers, personal and other household goods, 0.7 million jobs are in waste collection, treatment & disposal activities, 0.3 million are employed in recovery of sorted materials and wholesale of waste and scrap, 0.1 million jobs are located in in-store retail of second hand goods and 0.6 million people are employed in rental & leasing activities.

Figure 5. Estimates of current jobs in circular economy activities across Europe

In terms of the dispersion of employment in circular economy activities relative to overall employment Figure 6 demonstrates that jobs in circular economy activities across countries are distributed broadly in line with the distribution of overall employment by country. This finding is indicative of the potential for a growing circular economy in Europe to create opportunities for employment across all countries, in particular in countries (and sub-regions) where regional mismatch has contributed to persistently high levels of unemployment. To get an idea of the potential that exists in each country Figure 7 shows
an indicator of “circular economy” specialism (constructed here as the share of jobs in circular economy activity by country relative to Europe wide jobs in circular economy activity as a proportion of each countries total employment share relative to total European employment). This measure is likely to depend on the point in the economic cycle. On this measure a unit score means that a country is no more or less likely than the average to have an economic structure specialised towards circular economy activities. A score greater than one means the country has a greater than average propensity towards circular economy activity.

Figure 6 Distribution of jobs in circular economy activities and total jobs by country
Figure 7 Indicator of potential specialism in circular economy activities by country

Figure 8 reports estimates of the proportion of employment in circular economy activities per 10,000 population by country. On this measure many of the smaller Eastern countries have relatively high proportions (but comparatively low absolute levels of employment) of their populations employed in circular economy activities as measured by the mapping exercise described above.

Figure 8 Estimates of jobs per 10,000 population in circular economy activities by country
Breaking these estimates down further by broad circular economy activity Figure 9 shows the relative importance by country of employment in the waste & recycling, repair and rental & leasing sectors. For waste collection, treatment and disposal activities Bulgaria, Croatia, Czech Republic, Italy & Romania have the highest proportions of employment. Austria, Estonia, Finland, Slovakia, Sweden, Czech Republic, France, Hungary, Lithuania and Spain have the highest proportions of employment in repair activities (repair of machinery & equipment and repair of computers, personal and other household goods). In store retail of second hand goods is proportionately the highest in Estonia, Hungary, Latvia, Lithuania and the United Kingdom. For recovery of sorted materials France, Lithuania, Luxembourg, Romania & Slovenia have comparatively higher proportions of their populations employed while for wholesale of waste and scrap the top 5 countries are Bulgaria, Latvia, Lithuania, Poland and Spain. Countries for which rental and leasing activities have the highest proportion per 10,000 population are Ireland, Luxembourg, Malta, the Netherlands and the United Kingdom.

Figure 9 Estimates of jobs by broad circular economy activity per 10,000 population by country

3. Concluding Remarks: Prospects for benefits from circular economy

This analysis argues that increasing resource efficiency through growth in circular economy can help address structural mismatch in European labour markets. A circular economy creates economic value with more labour and fewer resources, therefore growth in circular economy can potentially deliver economic benefits such as employment creation and lower structural unemployment by offering a good geographical spread of job opportunities. Higher unemployment regions can benefit from remanufacturing employment at or near to existing manufacturing industry. Growth in recycling, re-use, repair activities (and
remanufacturing) also offer the potential to create jobs suitable for employees displaced from traditional manufacturing. Through expanding circular economy activity there’s a reasonable potential to reduce regional and/or occupational mismatch and a strong chance that net jobs can be created with sustained reductions in unemployment.

As circular economy activity expands its labour needs are likely to be recruited
from the existing stock of unemployed for occupations where unemployment is higher. In other words if you want to hire a low skilled worker, there is a greater chance that you could find someone who is currently unemployed than would be the case for hiring an experienced professional. So there’s a reasonable chance that a growing circular economy in Europe will offer opportunities for a range of occupations across regions and countries. The exploitation of the growth potential of a more circular economy requires use of indicators which will recognise its contribution. Focussing solely on labour productivity indicators and excluding other indicators of materials or resource productivity may not fully reflect the economic potential of moving towards a more circular economy. Indicators of material productivity alongside other indicators would better recognise the potential of a range of more circular business models which have the potential to make both significant contributions to economic growth, employment and social wellbeing.

The key points arising from the mapping of current employment patterns in circular economy activities are as follows:

1. Employment in these circular economy activities is distributed across Europe and broadly in line with the distribution of total employment
2. The circular economy activities in scope for this analysis would appear to offer the potential to create jobs across Europe by reducing regional mismatches in unemployment
3. There are currently an estimated 3.4 million people employed in the repair, waste & recycling and rental & leasing sectors across Europe
4. Measures of the propensity to specialise in ‘circular economy’ activities and patterns in the geographical distribution of broad circular economy activities illustrate a reasonable potential for all countries in Europe to benefit from an expansion in circular economy.

Facts for using the opportunity of the potential for an expansion in circular economy are:

- A growing circular economy can offer geographically dispersed employment a range of occupations.
- Reuse and open loop recycling activities are likely to be the least geographically concentrated, requiring activity at a local and regional level across countries with remanufacturing activity likely to be relatively more concentrated and located near existing OEM manufacturing facilities.
- For both open/closed loop recycling and reuse activities there’s a strong potential to offer some lower skilled jobs with remanufacturing and recycling activities requiring a greater proportion of mid-level skilled jobs.
PART II: WASTE MANAGEMENT: CREATING THE FUTURE IN COMPETITIVE SOCIETIES

1. The role of the waste management strategy in new way of living

The Waste Management Strategy reflects the national policy in waste management and represents the basis for preparation and implementation of an integrated and cost-effective waste management system. With this strategic document, a country defines the fundamental directions in waste management for the coming twelve-year period (2008-2020), on the basis of recognition of serious impacts to the living and natural environment caused by improper waste management at present and in the past, and it determines the fundamental directions of the gradual waste management system set up based on the hierarchy of the main principles of waste management and on the main principles of sustainable use of natural resources.

The Waste Management Strategy is a Government resolution, as an executive authority branch, and it predominantly represents the decisions of the Republic of Macedonia on the main environmental, economical and social goals, activities and measures towards mitigating the present environmental impacts and resolving the issues on waste management in the future. Harmonisation of legislation with the *acquis communautaire* as the inevitable process of the Macedonian approach towards membership of European Union represents only a useful tool in the establishment of an efficient and sustainable waste management system.

The Waste Management Strategy is a document on the aims and development of measures - with the primary intention of overcoming the unacceptable environmental situation with regard to impacts of improper waste management on the air-, water-, soil- and natural environment as well as public health,

- with the follow-up intention to reach complete control over generated waste streams, to reduce the waste quantities and hazardous potential, to achieve the optimal material/energy recovery and final disposal of waste by means of the optimal and contemporary system of new infrastructure facilities and

- with the final intention to introduce cleaner production technologies and sustainable management of natural resources and waste, as well as to reduce emissions of greenhouse gases arising from waste.

Waste simultaneously possesses environmental and economic components. Waste is not only a generator of impacts to the environment, but may also be recovered and reused. All recovery phases of waste fractions usable for the production of new goods or energy represent the preservation of nonrenewable natural resources. However, secondary raw material recovered from waste streams and secondary raw materials recovered from wastes are not entirely left open to the free market, since they are subject to policy and goals set by society. Simultaneously, waste management represents in all process phases of collection, material and energy recovery a potential of new employment in service and production activities.

All members of a society shall take corresponding responsibility of waste because they appear as holders and producers of waste in three contradictory roles:

- taking care of the quality of the environment, health and quality of life particularly for the
coming generations on both a global and local level,
- generating waste and polluting the environment in daily activities and
- consuming of goods and services.

This is the reason a special status is given to waste issues and the success and efficiency of the implementation of the waste management strategy depends, beside the necessary capital investments and space related limitations, above all on the correct balance of legal, institutional, organisational, sociological and in particular economical/financial instruments.

1.1. Main characteristics of general waste management scheme

The general waste management scheme represents an outline of the basic interrelated technological - technical measures and introduce the basic principles of the more-phase development of the technical waste management system in Macedonia; the complex of technological and technical measures shall serve as an efficient tool in order to increase of the waste collection rate, to reduce the quantities and hazardous potential of waste at source, to increase the material/energy recovery of waste, to build new and reconstruct existing landfills for stabilised hazardous and non-hazardous waste residues according to contemporary standards and finally, to remediate the contaminated areas. General management scheme for municipal waste means parallel and consecutive technical options covering the necessary measures from collection, storage, recovery of usable waste fractions and different treatment to the final disposal of stabilised, non-reactive waste residues. Reduction of municipal waste quantities at source may be achieved fast and at low cost by encouraging the multiple use of the primary packaging, by the composting of household biowaste on gardens and by composting of green waste from public and private green surfaces. Successful reduction of hazardous constituents in municipal waste depends mainly on the application of less hazardous constituents in products and packaging available on the market.

From the technical viewpoint, the main collection measures for the mixed municipal waste are:
1. collection by means of adequate collection vessels,
2. waste transfer stations and collection vehicles,
3. organised collection system for bulky waste and appointed recyclable materials by performing kerbside collections or the “bring-system” option to accept waste fractions at new facilities, i.e. “recycling yards”.

The collection of some usable end-of-life products, like secondary and tertiary packaging, used tyres and end-of-life vehicles may be organised at low cost at markets, storage and distribution centres, tyre and car-repair services and authorised breaker’s yards, respectively, as well as by a specialised collection network mainly according to the “producer’s responsibility” principle. Separate collection of municipal waste fractions shall be implemented with some retard in settlements with more than 50.000 habitants by means of organisation of kerbside collection, by distribution of “collection islands” in settlements or by “recycling yards”, which accept the appointed recyclable constituents. A mechanical-biological treatment (MBT) plant seems to produce optimal quantities of waste fractions which may serve as substitutes for natural resources: the secondary fuel for the appointed waste-to energy plants, different metal fractions for recycling processes and residual heavier
fraction intended for anaerobic biological treatment where biogas is produced and utilised for electricity and heat production. Stabilised residues from MBT processes may be disposed of as prepared artificial soil for general long-term remediation activities in highly polluted mining and industrial landfill areas.

2. Macedonian waste management
Application of the key principle on waste management, i.e. waste management hierarchy, proximity principle, self-sufficiency, producer responsibility, polluter pays principle, the precautionary principle shall represent the basic support to the Macedonian policy to improve the present situation in waste management on the one side and to develop the rational and sustainable use of natural resources in the future on the other side.

Waste management, as an integral part of sustainable management of natural resources shall, together with the integrated product policy and with the integrated prevention and pollution control policy lead to the proactive integration of the resource-related environmental issues into other policies of the Macedonian society. Reuse, recycling and material/energy recovery processes of waste fractions shall be encouraged in order to improve the use of resources and only unusable fractions shall be put to landfill. Proper management of biodegradable waste present in municipal waste and in waste from wastewater treatment, in agriculture waste and in waste from the food and beverage industry may significantly contribute to the reduction of greenhouse gas emissions. Such an approach means that every item of waste is seen not only as a source of pollution but also as a potential resource to be exploited and it shall result in de-coupling of economic growth and quantities of generated waste.

However, the Macedonian waste management policy shall incorporate some additional principles and obligations, in particular those related to the clear distinction and management of hazardous and nonhazardous waste, to encouragement of priority application of economic instruments in preference to legal instruments and to the establishment of the supervision/control systems regarding shipment of waste inside state territory and when hazardous waste crosses the state border regardless of intended management.

2.1. Measures for implementation of waste management strategy

Establishment of the functional network of the collection, treatment and disposal facilities, is mainly determined by the dynamics of investments in waste management facilities, by economic and other measures which stimulate investments, and by measures which assure that the operation costs of the entire waste management sector are fully covered according to the “polluter pays principle”. However, the investment dynamics shall balance with the economic development of country and with the living standard of the population on the one hand and on the other with the costs of unfavourable scenarios and with long-term and inked environmental and economic consequences if the main issues regarding the waste management are not solved.

Successful operation of the technical waste management concept in practice depends on providing for full political consent and favourable conditions for implementation of the interlinked key measures, i.e. waste management legislation, institutional and organisational measures together with the strengthening of human resources, economic measures, protection measures of the natural and cultural heritage, measures for raising stakeholders and public awareness regarding waste issues as well as encouragement of research and development activities.

Implementation of a sustainable waste management system is a gradual process, which however, involves the realisation of selected legal, institutional/organisational and in particular economic measures of high priority in order to reach the necessary progress in those areas, where implementation implies fundamental changes in various inter-linked social and economic activities.
PART III

CIRCULAR ECONOMY, RESOURCE EFFICIENCY AND WASTE MANAGEMENT: THE EVIDENCE FOR LATVIA, SLOVENIA AND CROATIA

A. LATVIA

1. Overview of the case for LATVIA

Latvia is a well-organised country that benefits from a good level of environmental protection and, generally high air and water quality. It has a relatively high variety of different ecosystems and natural areas and is one of the countries in Europe with the richest biodiversity and established nature conservation traditions. Environmental implementation in Latvia is good with low numbers of complaints and infringements. However, waste management and particularly recycling, remains amongst the challenges for Latvia requiring strong efforts in order to reach the 2020 recycling target of 50%. There is also further room for improvement in addressing resource intensity issues. Latvia could benefit from a more structured approach and political support to the circular economy, as well as from targeted eco-innovation policy.

The main challenges with regards to the implementation of EU environmental policy and law in Latvia are:

• Improving waste management, particularly increasing recycling, rolling-out separate collection and reducing landfilling;
• Reducing resource intensity which would lessen the exposure of Latvian businesses to rising resource costs.

Latvia could perform better on topics where there is already a good knowledge base and good practices. Main opportunities are:

• Use of the opportunities provided by EIB loans and EFSI support to further promote environmental projects;
• Use of market based instruments to encourage resource efficiency, particularly in waste management and in water resources management;
• High potential for Green Infrastructure development in order to address flood and erosion risks, while improving the connectivity of natural areas.

As Latvia is a leader on environmental implementation, innovative approaches could be shared more widely with other countries. Points of Excellence are:

• Good compliance record, having a low number of complaints and infringements.

2. Developing a circular economy and improving resource efficiency in Latvia

Transforming the economies from linear to circular offers an opportunity to reinvent them and make them more sustainable and competitive. This will stimulate investments and bring both short and long-term benefits for the economy, environment and citizens alike. Latvia's resource productivity (how efficiently the economy uses material resources to produce wealth), in 2014 in terms
of value produced per kg of resources used is 0.5 EUR/kg, above an EU average of 2 EUR/kg. Figure 1 shows that Latvia’s resource productivity has remained relatively stable since 2011. Latvia is gradually moving towards more eco-innovation but the speed depends largely on availability of financial resources. There is much scope for work in the area of public awareness and financial planning in order to foster more favourable conditions for eco-innovation development in Latvia. In Latvia responsibility for the policies related to eco-innovation and circular economy is split among a range of institutions, primarily the Ministry of Economy, Ministry of Education and Science and Ministry of Environmental Protection and Regional Development.

In the Sustainable Development Strategy for Latvia until 2030 one of the priorities is “Nature as future capital”, which aims to position Latvia as a leader in protection, promotion and sustainable use of ecosystem services. In addition, the National Development Plan 2014-2020 integrates sustainability concerns into a number of priority areas, including economic growth, energy efficiency and energy production, growth-oriented territorial development and sustainable management of natural and cultural capital. Targeted policy documents for promoting and utilising the principles of circular economy are in the early stages of development. The Declaration of the new Government of Latvia adopted in February 2016 highlights waste management, alternative fuels and bioeconomy as priorities.

In the Flash Euro barometer 426 "SMEs, resource efficiency and green markets" it is shown that 47% of Latvia’s Small and Medium-sized enterprises (SMEs) have invested up to 5% of their annual turnover in their resource efficiency actions (EU28 average 50%), 17% of them are currently offering green products and services (EU28 average 26%), 61% took measures to save energy (EU28 average 59%), 38% to minimize waste (EU28 average 60%), 41% to save water (EU28 average 44%), and 58% to save materials (EU28 average 54%). From a circular economy perspective, 16% took measures to recycle by reusing material or waste within the company (EU28 average 40%), 19% to design products that are easier to maintain, repair or reuse (EU28 average 22%) and 17% were able to sell their scrap material to another company (EU28 average 25%). According to the Flash Eurobarometer426, resource efficiency actions allowed the reduction of production costs in 44% of Latvian SMEs (EU28 average 45%). The Flash Eurobarometer 426 "SMEs, resource efficiency and green markets" shows that 47% of the SMEs in Latvia have one or more full time employee working in a green job at least some of the time (EU28 average 35%). Latvia has an average number of 2.1 full time green employees per SME (EU28 average 1.7%).

The key eco-innovation areas in Latvia have not changed markedly in recent years. Sectors that continue to develop include renewable energy and energy efficiency in residential buildings, forest-based industries and eco-cosmetics. In addition, service sectors that use Latvia’s ‘green image’ as a
key selling point – e.g. tourism, leisure and recreation and organic agriculture – maintain their activities. Among the developing eco-innovation areas in Latvia one can highlight electromobility. The overall position of Latvia in the Eco Innovation Scoreboard (Eco-IS) has improved from 24th place in 2013 (55 points) to 20th place in 2015 (74.9 points) as shown in Figure 2.

**Figure 2: Eco-Innovation Index 2015 (EU=100)**

The **main drivers** for eco-innovation in Latvia are certainly the energy and resource efficiency targets of the EU’s Europe 2020 strategy, which have been integrated in national policy documents and corresponding funding lines, most notably the EU Structural Funds envelope. This ensures a sustained political and financial commitment for the development of the green economy – an area that previously has not been high on the political agenda in Latvia.

The **main barriers** to eco-innovation development and diffusion in Latvia are related to the small number and size of companies active in environmental technology fields and the low innovative capacity of companies in general, especially in the medium and high-tech fields. In addition, the very limited number of large companies that have resources to divert to R&D and new technology adoption, and the low level of early-stage investments that are available for green technology development, are important hampering factors. NGOs have been active in initiating cultural change and positive influence from forerunner countries on societal and entrepreneurial awareness should not be underestimated. While the demand for eco-innovation products has been increasing in recent years, price is still a dominant factor in consumer and producer choice, which limits incentives for entrepreneurs to engage in eco-innovative activities.

Latvia does not have a specific green growth policy. But Sustainable Development Strategy of Latvia until 2030 has a special chapter on Innovative and eco-efficient economy. Besides, elements of eco-innovations are in chapter on Nature as capital for future, where several instruments and initiatives are suggested to maintain natural capital, for example, green budget reform, market instruments, support to firms and technologies that are eco-innovative. The Smart Specialisation Strategy aims to promote innovation capacity and the creation of a system that fosters and technological progress. Its priorities, amongst others, include support to the knowledge-based bio-economy, smart materials and smart energy. Green growth and circular economy vocabulary is being adopted gradually from EU directives, but their implications in the context of the national economy have to be still assessed to find the best solutions. Though, overreliance on the EU and EEA financial mechanisms create a fragmented support landscape that is not favourable to long-term green industry development.
3. Waste management
Turning waste into a resource requires:

- Full implementation of Union waste legislation, which includes the waste hierarchy; the need to ensure separate collection of waste; the landfill diversion targets etc.
- Reducing per capita waste generation and waste generation in absolute terms.
**Limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.**

The EU’s approach to waste management is based on the “waste hierarchy” which sets out an order of priority when shaping waste policy and managing waste at the operational level: prevention, (preparing for) reuse, recycling, recovery and, as the least preferred option, disposal (which includes land filling and incineration without energy recovery). The progress towards reaching recycling targets and the adoption of adequate WMP/WPP should be the key items to measure the performance of Member States. This section focuses on management of municipal waste for which EU law sets mandatory recycling targets. The amount of municipal waste generated in Latvia amounted to 325 kg/y/inhabitant in 2014 (well below the EU average of 475 kg/y/inhabitant). Figure 3 depicts the municipal waste by treatment in Latvia in terms of kg per capita, which shows a decrease in recycling and an increase in landfilling. The main treatment option of municipal waste remains disposal in landfills. In 2014, Latvia landfilled a big share of municipal waste (79% in 2014, a slight drop from 83% in 2013) against the EU average of 26%. Composting is broadly stable at only 4% in 2014 (EU average 28% in 2014).

**Figure 3: Municipal waste by treatment in Latvia 2007-14**

**Figure 4: Recycling rate of municipal waste 2007-1420**
Waste Management Plans/Waste Prevention Programmes
As shown in Figure 4, recycling of municipal waste increased only slightly from 17% in 2013 to 21% in 2014 (EU average was 44% in 2014), while composting of municipal waste in Latvia dropped from 6% in 2013 to 4% in 2014 (EU average being 16% in 2014). This means that Latvia is under an increasing risk of not meeting 50% recycling target by 2020, and the 2020 landfill diversion targets for biodegradable waste (75%).

Although Latvia has achieved some progress in municipal waste management over the past couple years, significant investments are still required. These include:

- putting in place infrastructure to improve separate waste collection and increase waste recycling capacity (packaging and biodegradable waste),
- making improvements in market instruments (taxation of polluting products, extended producer responsibility), and
- adapting administrative and regulatory measures to facilitate recovery, including composting.

In order to make recycling economically viable, an incineration and MBT tax (mechanical biological treatment), whilst keeping the landfill tax higher than taxes for incineration and MBT, would be effective. In order to help bridging the implementation gap in Latvia, the Commission has delivered a roadmap for compliance in which economic instruments play a crucial role. Revenues from a landfill tax in conjunction with further refinement of the allocation of the CF (allocations should be prioritised to the first steps of the waste hierarchy) could contribute to building and operating the infrastructure required to meet EU targets. Full implementation of the existing legislation could create more than 2,800 jobs in Latvia and increase the annual turnover of the waste sector by over EUR 304 million. Moving towards the targets of the Roadmap on resource efficiency could create over 3300 additional jobs and increase the annual turnover of the waste sector by over EUR 350 million.

**International agreements**

Most environmental problems have a transboundary nature and often a global scope and they can only be addressed effectively through international co-operation. International environmental agreements concluded by the Union are binding upon the institutions of the Union and on its Member States. This requires the EU and the Member States to sign, ratify and effectively implement all relevant multilateral environmental agreements (MEAs) in a timely manner. Latvia has signed and ratified almost all MEAs. It has signed but not yet ratified the International Convention for the Regulation of Whaling and the Nagoya Protocol.

**4. Latvia’s Implementation Tools for enhancing environmental policy**

**4.1. Green taxation**

The Circular Economy Action Plan encourages the use of financial incentives and economic instruments, such as taxation to ensure that product prices better reflect environmental costs. The phasing out of environmentally harmful subsidies is monitored in the context of the European Semester and in national reform programmes submitted by Member States. In this way Latvia implemented environmental tax or green taxation. Taxing pollution and resource use can generate increased revenue and bring important social and environmental benefits. Environmental taxation has been strengthened but there is further scope for a growth-friendly tax shift. In 2014, the ratio of tax revenues to GDP in Latvia slightly exceeded the EU average (2.67% vs 2.46% of GDP). In the same year environmental tax revenues accounted for 9.26% of total revenues from taxes and social-security contributions (EU28 average: 6.35%) as shown in Figure 5. Most of the revenue of environmental taxes still comes from energy taxes (74% of environmental taxes in 2014), while the share of transport was 18% of total environmental taxes in 2014. Pollution/resource and transport taxes (excluding transport fuels) have produced smallest revenue streams – 4%. Additional revenue from environment
related taxes could therefore alleviate budgetary pressures and provide the necessary source for funding contributing to the green economy.

Figure 5: Environmental tax revenues as a share of total revenues from taxes and social contributions (excluding imputed social contributions) in 2014

Further increasing taxes on the use of natural resources and decrease of environmentally harmful subsidies would contribute to achieving environmental goals; improve resource and energy efficiency that would lead to higher levels of output and employment at the same time providing room for a shift away from taxation of labour.

4.2. Green Public Procurement (GPP)

GPP is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured. The purchasing power of public procurement in the EU equals to approximately 14% of GDP. A substantial part of this money is spent on sectors with high environmental impact such as construction or transport, so GPP can help to significantly lower the impact of public spending and foster sustainable innovative businesses. The Commission has proposed EU GPP criteria. In Latvia, a national strategy on Green Public Procurement (GPP) is included in the “Green Procurement support plan for 2015 – 2017”, which was elaborated by the Ministry of Environmental Protection and Regional Development in cooperation with stakeholders.

4.3. The contribution of EU funds

European Structural and Investment Funds Regulations provide that Member States promote environment and climate objectives in their funding strategies and programmes for economic, social and territorial cohesion, rural development and maritime policy, and reinforce the capacity of implementing bodies to deliver cost-effective and sustainable investments in these areas. Making good use of the ESIF is essential to achieve the environmental goals and integrate these into other policy areas. Other instruments such as the Horizon 2020, the LIFE programme and the EFSI87 may also support implementation and spread of best practice. Latvia, through 3 national programmes, benefits the ESIF funding of EUR 5.6 billion over the period 2014-2020. Current data suggest that the
EU funds for the 2007-2013 period were fully spent.

Figure 12: European Structural and Investment Funds 2014-2020: Budget Latvia by theme, EUR billion
4.4. Effective governance and knowledge

Effective governance of EU environmental legislation and policies requires having an appropriate institutional framework, policy coherence and coordination, applying legal and non-legal instruments, engaging with non-governmental stakeholders, and having adequate levels of knowledge and skills. Successful implementation depends, to a large extent, on central, regional and local government fulfilling key legislative and administrative tasks, notably adoption of sound implementing legislation, co-ordinated action to meet environmental objectives and correct decision-making on matters such as industrial permits. Beyond fulfilment of these tasks, government must intervene to ensure day-to-day compliance by economic operators, utilities and individuals (“compliance assurance”). Civil society also has a role to play, including through legal action. To underpin the roles of all actors, it is crucial to collect and share knowledge and evidence on the state of the environment and on environmental pressures, drivers and impacts.

In 2011, as part of a reform programme put in place to recover from the financial crisis the Latvian Ministry of the Environment merged with the Ministry of Regional Development and Local Government. This merger also resulted in financial cuts (at around 19%). It is essential that sufficient capacity and funds for the successful implementation of environmental legislation as well as the achievement of environmental objectives are retained. Latvia aims to transpose new directives into national legislation respecting the established timelines and the number of non-communication cases opened for non-communication of national legislation transposing new directives are low. Latvia has a low number of complaints. Cases often focus on transposition of EU law into national law and these are resolved quickly.

Access to justice in environmental matters is a set of guarantees that allows citizens and their associations to challenge acts or omissions of the public administration before a court. It is a tool for
decentralised implementation of EU environmental law. For each Member State, two crucial elements for effective access to justice have been systematically reviewed: the legal standing for the public, including NGOs and the extent to which prohibitive costs represent a barrier. Latvia grants the public, notably individuals and NGOs, a very broad access to justice in environmental cases (actio popularis). The costs for bringing a case to a court are also not considered as being prohibitively high. This guarantees that members of the public are provided with good conditions for asking for a judicial review in environmental matters. However, the court procedures, including environmental cases, in Latvia are rather long.

4.5. Access to information, knowledge and education

It is of crucial importance to public authorities, the public and business that environmental information is shared in an efficient and effective way. This covers reporting by businesses and public authorities and active dissemination to the public, increasingly through electronic means. The Aarhus Convention \(^2\), the Access to Environmental Information Directive \(^3\) and the INSPIRE Directive \(^4\) together create a legal foundation for the sharing of environmental information between public authorities and with the public. They also represent the green part of the ongoing EU e-Government Action Plan \(^5\). The first two instruments create obligations to provide information to the public, both on request and actively. The INSPIRE Directive is a pioneering instrument for electronic data-sharing between public authorities who can vary in their data-sharing policies, e.g. on whether access to data is for free. The INSPIRE Directive sets up a geoportal which indicates the level of shared spatial data in each Member State – i.e. data related to specific locations, such as air quality monitoring data. Amongst other benefits it facilitates the public authorities’ reporting obligations.

For each Member State, the accessibility of environmental data (based on what the INSPIRE Directive envisages) as well as data-sharing policies (‘open data’) have been systematically reviewed. Latvia’s performance on the implementation of the INSPIRE Directive as enabling framework to actively disseminate environmental information to the public leaves room for improvement. Latvia has indicated in the 3-yearly INSPIRE implementation report that the necessary data-sharing policies allowing access and use of spatial data by national administrations, other Member States’ administrations and EU institutions without procedural obstacles are available and implemented. Data-sharing in Latvia is implemented through global or bilateral cooperation agreements between public authorities. The cooperation model in place is not specific to spatial information, but is used for all kind of information. The licences used for spatial information are standardized. Assessments of monitoring report issued by Latvia and the spatial information that Latvia has published on the INSPIRE geoportal indicate that not all spatial information needed for the evaluation and implementation of EU environmental law has been made available or is accessible. The larger part of this missing spatial information consists of the environmental data required to be made available under the existing reporting and monitoring regulations of EU environmental law.

5. Concluding Remarks and Recommendations

Latvia is a well organised country that benefits from a good level of environmental protection and, generally high air and water quality. It has a relatively high variety of different ecosystems and natural areas and is one of the countries in Europe with the richest biodiversity and established nature conservation traditions. Environmental implementation in Latvia is good with low numbers of complaints and infringements. However, waste management and particularly recycling, remains amongst the challenges for Latvia requiring strong efforts in order to reach the 2020 targets.


\(^3\) European Union, Directive 2003/4/EC on public access to environmental information
recycling target of 50%. There is also further room for improvement in addressing resource intensity issues. Latvia could benefit from a more structured approach and political support to the circular economy, as well as from targeted eco-innovation policy.

As was mentioned at the beginning of the analysis that Latvia is a leader on environmental implementation with some points of excellence like good compliance record, having a low number of complaints and infringements. But there are some areas that Latvia need to give more efforts.

The recommendation for Latvia about further reforms in enhancing continuously the development in circular economy and resource efficiency, are:

- Introduce and gradually increase landfill taxes to phase-out landflling of recyclable and recoverable waste. Use the revenues to support the separate collection and alternative infrastructure in conjunction with a better allocation of the cohesion policy funds to the first steps of waste hierarchy. Avoid building excessive infrastructure for the treatment of residual waste.
- Focus on implementation of the effective separate collection scheme to increase recycling rates. Once this is in place consider introducing PAYT (Pay As You Throw) schemes.
- Improve transparency on organisation and functioning of compliance assurance system and on how significant risks are addressed, as outlined above.
- Encourage greater participation of competent authorities in the activities of ENPE, EUFJE and EnviCrimeNet.
- Step up efforts in the implementation of the Environmental Liability Directive (ELD) with proactive initiatives, in particular by drafting national guidance. It should moreover take further steps to ensure an effective system of financial security for environmental liabilities (so that operators not only have insurance cover available to them but actually take it up).
- Identify and document all spatial data sets required for the implementation of environmental law, and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services foreseen in the INSPIRE Directive.
B. SLOVENIA

1. Overview of the case for Slovenia

Slovenia's diverse and rich natural environment is its key natural resource. It also has the biggest share of land area covered by Natura 2000 and is one of the most forested countries in the EU. Well-preserved nature delivers multiple socio-economic benefits. However, it requires a good planning system and environmental infrastructure to provide necessary safeguards. As regards compliance with the EU environmental legislation, Slovenia still has a relatively high number of environmental infringement cases. To reverse this situation, it should address its key non-compliance cases.

The three **main challenges** with regard to implementation of EU environmental policy and law in Slovenia are:

- Streamlining the legal framework related to planning and environmental assessments by ensuring that EU environmental legislation is respected, while administrative burden and barriers to investments are reduced.
- Preserving Slovenia's extensive Natura 2000 network by integrating economic and nature considerations in the planning and environmental assessment system.
- Prioritising waste-water investments to fulfil Slovenia’s Accession Treaty obligations.

Slovenia could perform better on topics where there is already a good knowledge base and good practices. **Main opportunities** are:

- Excelling further in waste management to become one of the EU's top-performing Member States.
- Accelerating a shift towards a circular economy as part of implementing Slovenian's Framework Programme for the Transition to a Green Economy and the Smart Specialisation Strategy.
- Boosting knowledge on circular economy among small and medium sized-enterprises (SMEs) and creating investment opportunities for such businesses.

Where Slovenia leads in environmental implementation, it could share its approaches more widely among other countries. Points of excellence are:

- The best performing EU-13 Member State in terms of municipal waste recycling with its state-of-the-art regional waste management centre in Ljubljana.
- EU-wide, Slovenia boasts one of the highest contributions of revenues from environmental tax.

2. Developing a circular economy and improving resource efficiency in Slovenia

Transforming our economies from linear to circular offers an opportunity to reinvent them and make them more sustainable and competitive. This will stimulate investments and bring both short and long-term benefits for the economy, environment and citizens alike. Slovenia faces numerous opportunities and challenges in the transition towards a circular economy and in eco-innovation development. On one hand, it is the third most forested country in Europe, abundant with natural capital, and endowed with a high level of biodiversity and rich natural habitats. On the other hand, economic and systemic challenges still remain and do not facilitate and encourage the transition towards a circular economy. By announcing circular economy and green development as Slovenia’s strategic objectives, the Government has initiated the first steps in creating the needed political framework.
Figure 1: Resource productivity 2003-15
As part of its circular economy agenda, Slovenia adopted the Framework Programme for the Transition to a Green Economy in October 2015. It sets strategic guidelines for developing new green technologies, jobs and the promotion of the Slovenian knowledge. Its measures cover 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. Slovenia also has a well-developed strategic approach to embedding a circular economy within the European Structural and Investment Funds as part of the national Smart Specialisation Strategy. Despite a strong support to the circular economy in the Government’s strategic documents, it seems to be still challenging to operationalise this concept. The gap between the declaratory and actual support, together with the lack of financial incentives, was noted by the private sector as the main barrier in the transition towards a circular economy.

According the link between SMEs and resource efficiency in Slovenia the data show that SMEs provide 63% of value added and nearly 73% of employment. Slovenian companies in general are not highly competitive and do not have a very high value added per employee, or material and energy productivity. This situation could be improved without much investment. As the Flash 426 Eurobarometer on "SMEs, resource efficiency and green markets" shows, a quarter (25%) of Slovenian SMEs taking resource efficiency actions did not have to invest any of their turnover on resource efficiency in the last two years (EU average 26%); whereas 58% of SMEs invested up to 5% (EU28 average 50%). In terms of type of resource-efficiency actions, 33% offered green products and services (EU28 average 26%), 44% took measures to save energy (EU28 average 59%), 40% minimised waste (EU28 average 60%), 29% saved water (EU28 average 44%) and 45% saved materials (EU28 average 54%). From a circular economy perspective, 30% of SMEs took measures to recycle by reusing material or waste within the company (EU28 average 40%), 19% designed products that are easier to maintain, repair or reuse (EU28 average 22%) and 20% were able to sell their scrap material to another company (EU28 average 25%). The above measures allowed the reduction of production costs in 61% of the Slovenia’ SMEs (EU28 average 45%). The same Eurobarometer shows that Slovenia has an average number of 2.0 full time green employees per SME (EU28 average 1.7).

**Eco-innovation:** Slovenia has 10 EMAS registered organisations, which is a quite low with respect to the total of 4034 organisations that hold a registration. There have not been any changes in the number of registered organisation since October 2015. Concerning the EU Eco-label, Slovenia has 14 licenses, which is quite a low number compared to the 1875 total number of licenses.

3. Waste management

Turning waste into a resource requires:

- **Full implementation of Union waste legislation, which includes the waste hierarchy; the need to ensure separate collection of waste; the landfill diversion targets etc.**
- **Reducing per capita waste generation and waste generation in absolute terms.**
- **Limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.**
Slovenia made very good progress as concerns waste management in the past years. According to the 2014 data reported to Eurostat, its municipal waste recycling rates are among the highest in the EU (61%), and have more than doubled since 2007. However, this recycling rate is calculated based on the amount of waste treated and for Slovenia the gap between waste generated and treated is very large (approx. 40% in 2014) due to incomplete coverage of outputs from pre-treatment of waste. If the recycling rate was calculated based on the amount of waste generated, it would be 36%. Nevertheless, despite the data uncertainty, Slovenia can still be a useful example to other Member States, showing how to improve waste management in a relatively short time-frame.

**Figure 3: Municipal waste by treatment in Slovenia 2007-14**

Figure 3 depicts the municipal waste by treatment in terms of kg per capita. It shows an increase of recycling rates, composting and incineration, and a decrease in landfilling. This is mainly due to the country's overall effort to change their waste management policy and move from a nearly all-landfilling (landfilling rate was 75% in 2007) towards predominantly recycling society. According to the latest Eurostat data (2014), the landfilling rate is 39%. As shown in Figure 4, Slovenia's material recycling rate is 61% if waste treated is taken as denominator (49% if generation is taken as denominator), Slovenia seems to be on the right path towards meeting the ‘2020’ 50% recycling target.

**Figure 4: Recycling rate of municipal waste 2007-14**

However, recent studies show that the amount of waste generated by municipalities and waste management performance in individual municipalities vary considerably. To a certain extent, they depend on the lifestyle and awareness of residents, the available capacities for waste disposal, and the willingness of municipalities to find new solutions. In 2013, Slovenia adopted a WMP for the municipal waste. However, this Plan did not cover other waste streams. Slovenia also failed to adopt a WPP by 12 December 2013, as required by the Waste Framework Directive. Following an
infringement procedure, Slovenia adopted an integrated WMP and a WPP on 30 June 2016. Irrespective of delays in adoption of plans, there have been several positive developments in waste
management. For example, the national legislation for separate bio-waste collection is in place. In this respect, many municipalities and communities introduced a frequency of collection and door to door collection systems. Many local authorities have put in place collection systems that exceed the requirements of the national legislation. NGOs have been very active in the waste sector; as a result, a number of municipalities and communities (including the city of Ljubljana) have developed Zero Waste policies, with more working towards the same achievement. A recent study assessing separate collection in EU capitals rated Ljubljana as the best performing capital in the EU.

Pay as you throw systems were also introduced. Although the adopted approach is a relatively simple one, and it applies charges to the residual and bio-waste bins. As regards the waste infrastructure, the Regional Waste Management Centre in Ljubljana (RCERO Ljubljana) is one of the most modern waste treatment facilities in Europe. It is also the biggest environmental project in Slovenia in terms of its budget (co-financed by the Cohesion Policy) and waste treatment capacity. It comprises 37 municipalities and serves as a good practice example of cooperation among municipalities. It would further contribute to diverting waste from landfilling. It is projected that the full implementation of the existing legislation could create more than 2100 jobs in Slovenia and increase the annual turnover of the waste sector by over EUR 220 million. Moving towards the targets of the Roadmap on resource efficiency could create over 2600 additional jobs and increase the annual turnover of the waste sector by over EUR 270 million.

International agreements: The EU Treaties require that the Union policy on the environment promotes measures at the international level to deal with regional or worldwide environmental problems. Slovenia has signed and ratified almost all MEAs. It has signed but not yet ratified the Offshore Protocol of the Barcelona Convention and the Nagoya Protocol.

4. Slovenia’s Implementation Tools for Enhancing Environmental Policy

4.1. Green taxation

The Circular Economy Action Plan encourages the use of financial incentives and economic instruments, such as taxation to ensure that product prices better reflect environmental costs. The phasing out of environmentally harmful subsidies is monitored in the context of the European Semester and in national reform programmes submitted by Member States. In this way Slovenia implemented environmental tax or green taxation. In 2014, environmental tax revenue amounted to 3.89% of Slovenia’s GDP. This percentage share was the second highest in the EU-28 for the year.

Figure 5: Environmental tax revenues as a share of total revenues from taxes and social contributions (excluding imputed social contributions) in 2014
In the same year environmental tax revenues accounted for 10.61% of total revenues from taxes and social-security contributions (EU-28 average: 6.35%) as shown in Figure 5. It puts Slovenia in the first place among other EU Member States. The majority of Slovenia’s environmental tax revenue for 2014 came from taxation of energy, which amounted to 3.0% of GDP. Transport (excluding fuel) taxes amounted to 0.46% of GDP, and pollution and resource taxes amounted to 0.45% of the country’s GDP. Slovenia performs well in terms of the use of market based instruments to achieve environmental policy objectives.

4.2. Green Public Procurement (GPP)

GPP is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured. The GPP legislative framework in Slovenia is currently under revision. It is planned that the guidelines for GPP criteria in more additional product groups will be prepared.

4.3. The contribution of EU funds

Slovenia is eligible in this period for the overall funds support totalling approximately EUR 3.9 billion (including, approximately EUR 3 billion from the cohesion policy covering ERDF, ESF and CF; EUR 837 million from EAFRD; and EUR 24.8 million from the EMFF). For the period 2007-2013, 567 million, or 40% of the CF budget was allocated to water, wastewater or waste projects. By the end of 2015 Slovenia fully used the allocated funds which were used to construct six new regional centres for waste management throughout the country, extension of drinking water supply networks, the construction and upgrade of water retention basins; the construction and refurbishment of sewage networks and waste water treatment plants. Thanks to these investments, Slovenia increased by 16% the share of adequate wastewater infrastructure in agglomerations above 2000 p.e. Nonetheless, complying with the Urban Wastewater Directive remains the main investment gap for Slovenia that even the Structural Funds allocation for 2014-2020 will not be able to bridge.
Figure 12: European Structural and Investment Funds 2014-2020: Budget Slovenia by theme, EUR billion
4.4. Effective governance and knowledge

It is crucial that central, regional and local administrations have the necessary capacities and skills and training to carry out their own tasks and co-operate and co-ordinate effectively with each other, within a system of multi-level governance. In accordance with the 2015 Council recommendations, "An unsupportive business environment in Slovenia is a key factor for low investment levels in Slovenian business and the high number of laws and numerous changes in the legislation make it difficult to run a business and comply with local regulation." It is reinstated in the Commission Staff Working Document on Member States Investment Challenges. To address these investment challenges, the authorities are planning to reform the spatial planning and building legislation. Slovenia usually ensures timely and correct transposition of the EU environmental directives. Slovenia is among the countries with the highest number of environmental infringement cases and EU Pilot investigations. Most of them are related to waste management, air and industrial emissions legislation, and nature protection.

Access to justice in environmental matters is a set of guarantees that allows citizens and their associations to challenge acts or omissions of the public administration before a court. It is a tool for decentralised implementation of EU environmental law. In general, the existing rules and provisions in Slovenia concerning access to administrative appeal and to judicial review are predictable and transparent. However, environmental NGOs still do not have legal standing in many of the environmental sectors. The costs of administrative court procedure, however, are not considered as being prohibitively high.

4.5. Access to information, knowledge and education

Slovenia's performance on the implementation of the INSPIRE Directive as enabling framework to actively disseminate environmental information to the public leaves room for improvement. It has indicated in the 3-yearly INSPIRE implementation report123 that the necessary data-sharing policies allowing access and use of spatial data by national administrations, other Member States' administrations and EU institutions without procedural obstacles are available but not fully implemented. Recently amendments were made to the Slovenian Public Information Access Act to implement the Directive on the re-use of public sector information. Data gathered in the public administration during the execution of public tasks will have to be available for reuse without charging fees.

Assessments of monitoring reports124 and the spatial information that Slovenia has published on the INSPIRE geoportal indicate that not all spatial information needed for the evaluation and
implementation of EU environmental law has been made available or is accessible. The larger part of this missing spatial information consists of the environmental data required to be made available under the existing reporting and monitoring regulations of EU environmental law.

5. Concluding Remarks and Recommendations

Slovenia's diverse and rich natural environment is its key natural resource. It also has the biggest share of land area covered by Natura 2000 and is one of the most forested countries in the EU. Well-preserved nature delivers multiple socio-economic benefits. However, it requires a good planning system and environmental infrastructure to provide necessary safeguards. As regards compliance with the EU environmental legislation, Slovenia still has a relatively high number of environmental infringement cases. To reverse this situation, it should address its key non-compliance cases.

According this as Recommendations for Slovenia about further reforms in enhancing continuously the development in circular economy and resource efficiency, are:

- Decrease the discrepancies between the adopted and implemented measures.
- Introduce economic instruments to increase the costs of residual waste treatment, e.g. by increasing the current rate of landfill tax, or by introducing a residual waste tax on the other non-recycled outputs from MBT systems (including outputs to thermal treatment).
- Improve data on waste management- including issues of consistency between different sources and a large gap between waste generated and treated.
- Extend and improve the cost-effectiveness, monitoring and transparency of existing EPR schemes and eliminate free-riding (situations where some producers do not adequately comply with their obligations under EPR).
- Critically review the effectiveness of its data policies and amend them, taking 'best practices' into consideration.
- Identify and document all spatial data sets required for the implementation of environmental law, and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services foreseen in the INSPIRE Directive.
- Ensure that the EU environmental legislation is respected as part of the reform of the national permitting system aiming to remove unnecessary administrative burden and streamline procedures.
- Ensure standing of environmental NGOs to challenge acts or omissions of a public authority in all sectoral EU environmental laws, in full compliance with EU law as well as the Aarhus Convention.
- Improve transparency on the organisation and functioning of compliance assurance and on how significant risks are addressed, as outlined above.
- Encourage greater participation of competent authorities in the activities of ENPE, EUFJE and EnviCrimeNet.
- Step up efforts in the implementation of the Environmental Liability Directive (ELD) with proactive initiatives, in particular by setting up a national register of ELD incidents and drafting national guidance. Slovenia should take further steps to ensure an effective system of financial security for environmental liabilities (so that operators not only have insurance cover available to them but actually take it up).

Overall challenges have included budget constraints, wide responsibilities and a lack of specialised staff. Up-to-date information is lacking in relation to the following:

- data-collection arrangements to track the use and effectiveness of different
compliance assurance interventions;
• the extent to which risk-based methods are used to direct compliance assurance at the strategic level and in relation to critical activities outside of industrial installations, in
particular in specific problem-areas highlighted elsewhere in this Country Report, i.e. issues related to illegal dumping, the threats to protected habitat types and species, air quality breaches and the pressures on water quality from point and diffuse water pollution, including inadequate urban waste-water infrastructure; and

• how the Slovenian authorities ensure a targeted and proportionate response to different types of non-compliant behaviour, given that the focus is on administrative procedures and sanctions and that the probability of being prosecuted and criminally sentenced for environmental offences seems to be low.

C. CROATIA

1. Overview of the case for Croatia

Croatia is characterised by rich natural heritage, with an abundance of water, remarkable coastal waters, natural parks and diverse marine and terrestrial ecosystems. Croatia’s economic development depends largely on these resources and in particular tourism sector. However, the expansion of tourism has undoubtedly both a direct and an indirect impact on the environment which includes pressure on biodiversity, increase in waste generation and water and energy consumption. All these pressures need to be addressed adequately. Sustaining Croatia’s economic development depends essentially on effective natural resources management, increased investments and ensuring compliance with the EU environmental legislation. The most critical sector that needs urgent action is waste management. The transition to a more circular economy is slow and it will require strong involvement of policy-makers, business actors and consumers. The designation of Natura 2000 sites and implementing conservation measures represent a challenge as well.

The three main challenges with regard to implementation of EU environmental policy and law in Croatia are:

• Improving waste management in particular increasing recycling of municipal waste to meet the EU recycling target by 2020 and facilitate the transition to a more circular economy together with the improvement of resource efficiency and eco-innovation.
• Completing the designation of Natura 2000 sites (marine SCIs and SPAs and SACs) and ensuring their effective management.
• Prioritising the implementation of projects necessary for the fulfilment of the requirements of the Accession Treaty with respect to Urban Waste Water Treatment Directive and Drinking Water Directive.

Croatia could perform better on topics where there is already a good knowledge base and good practices:

• Learning from the local examples of good waste management practices and replicating them in less successful regions.
• Ensuring effective protection and restoration of Croatia’s natural capital, especially under the Natura 2000 network so as to maximise potential benefits deriving from ecosystem services which can serve as powerful economic drivers, including through green tourism and other sustainable activities.
• Turning waste into resource and low recycling rates into business opportunities.

There are several examples of good practices of environmental implementation or innovative approaches that could serve as an example. These are:

• Eco Island Krk is ecologically based system for management of municipal waste, which represents an integral model of waste disposal, first of its kind in Croatia. In 2015, the municipality has reached 50% of waste separation and the preparation for re-use and the recycling, therefore already meeting the 2020 target under the Waste Framework Directive. A great importance is given to the promotion of
the system and education of users.
• An EU-funded project on modernisation of the water and wastewater infrastructure has been finalised in Slavonski Brod. Its main objective was to ensure that it meets European standards, bringing benefits to inhabitants and safeguarding the environment of the River Danube Basin.
• In October 2015, Croatia prepared the Green Book: the technical basis for the development of low carbon strategy for Croatia for the period until 2030 with an outlook to 2050. This strategy sets the path towards a competitive low-carbon economy. It applies to all sectors of the economy and human activities, but it is especially related to the energy, industry, transport, agriculture, forestry and waste management. It is superior to the sector strategies, although operationally implemented through the individual sectors.

2. Developing a circular economy and improving resource efficiency in Croatia

Given the low resource productivity and low recycling rates in Croatia, promoting a circular economy and improving resource efficiency could stimulate investment. Resource productivity in Croatia (how efficiently the economy uses material resources to produce wealth), has improved slightly over the last ten years, however, it is still much below the EU average, with 1.1 EUR/kg (EU average is 2.0 EUR/kg) in 2015 as shown in Figure 1. Croatia’s environmental and socio-economic issues indicate that Croatia is only beginning its transition from a linear to a circular economy. Six years period of economic recession, a general lack of adequate policies and competences and a regulatory framework that remains only partially adjusted to EU regulations contribute to Croatia’s lag in its transition towards a circular economy.

Figure 1: Resource productivity 2003-15

There exists broad based consensus that there is no long-term involvement in the push to the transition to a circular economy which presents a great challenge for Croatian policy-makers, national and local authorities, as well as to economic actors, such as business and consumers. Yet, there exists growing awareness among these actors that current circumstances demand systematic change in business and market models, product design, ways of transferring waste to resources, and in the producers and consumers’ related values and behaviour.
In Croatia, the most relevant policies for the development of circular economy and eco-innovation include:

- Sustainable Development Strategy of (2009)
- Strategic plan of Ministry of Environment and Nature Protection 2015-2017
- National renewable energy action plan until 2020
- Strategy for innovation encouragement of the Republic of Croatia 2014-2020
- Third national plan for energy efficiency 2014-2016 and
- Waste Management Strategy

According to the link between SMES and resource efficiency, SMEs in Croatia account for 56.2% of total value added - compared with 58% in the EU - and provide 67% of total employment, which is close to the EU average. Since 2008, the value added of Croatian SMEs has dropped by over 25% and their employment by nearly 13%. The outlook for the period 2014-2018 offers a gradual recovery. In the Flash 426 Eurobarometer "SMEs, resource efficiency and green markets" it is shown that in 2015, 57% of Croatia's SMEs have invested up to 5% of their annual turnover in their resource efficiency actions, 23% of them are currently offering green products and services, 64% took measures to save energy (EU28 average 59%), 66% to minimise waste (EU28 average 60%), 51% to save water (EU28 average 44%), and 53% to save materials (EU28 average 54%). From a circular economy perspective, 33% took measures to recycle by reusing material or waste within the company, 18% to design products that are easier to maintain, repair or reuse and 27% were able to sell their scrap material to another company. Cost saving is by far the most common reason for taking resource efficiency actions (68% of SMEs in the EU). In Croatia, 71% of the SMEs taking resource efficiency actions are doing so for cost savings. In fact, according to the Flash 426 Eurobarometer, the resource efficiency actions undertaken allowed the reduction of production costs in a 51% of the Croatian SMEs.

**Eco-Innovation:** For the year 2015 Croatia is ranked low among the EU-28 countries in terms of eco-innovation performance. The country has achieved an index 33% lower than the EU average. This places Croatia fifth from the bottom in the EU-28 ranking of eco-innovation, which is the same ranking Croatia held in 2013. Croatia underwent a significant period of economic recession from 2008 until 2014, which had significant negative impacts on the scope of investments, including those in clean technologies. A major consequence of the recession included significantly less funds allocated for environmental improvements as well as for research and development in the environmental technologies sector. In 2014 and 2015 a modest growth of production was observed. Thus, access to investments for eco-innovation and circular economy development remain mainly provided through EU funds.

Eco-innovation could be further developed and promoted in Croatia. A targeted eco-innovation policy still does not exist. Current efforts of responsible bodies to support technological innovation in general (which primarily focus on the small and medium-sized business sector) may not be sufficient to improve eco-innovation.

Regarding Ecolabel licenses, Croatia is within the lowest achieving group of EU countries. Indeed, it has had less than 10 Ecolabel licenses.

### 3. Waste management

Turning waste into a resource requires:

- **Full implementation of Union waste legislation, which includes the waste hierarchy; the need to ensure separate collection of waste; the landfill diversion targets etc.**
- **Reducing per capita waste generation and waste generation in absolute terms.**
- **Limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.**

Figure 3 depicts the municipal waste by treatment in Croatia in terms of kg per capita, which shows a slight increase in recycling and reduction in landfilling.

**Figure 3: Municipal waste by treatment in Croatia 2007-14**
Recycling of municipal waste (including composting) remains quite low (17% in 2014 compared to the EU average of 44% in 2014); significant efforts will be needed to meet the EU recycling target by 2020 as shown in Figure 4.

**Figure 4: Recycling rate of municipal waste 2007-14**

The underlying causes for the current distance to EU waste targets are: suboptimal planning of waste management, insufficient incentives to manage waste according to the waste hierarchy, insufficient (door-to-door) separate collection of waste, lack of clear allocation of tasks and lack of co-ordination between the different administrative levels, and insufficient enforcement capacity. Although Croatia has invested in improvements to its waste management services, to date, most of the investment has been focussed on residual waste treatment. At the lower levels of the hierarchy, and at the local level, however, there is insufficient funding available to develop and operate source segregated collection services.

Croatia has joined the European Union relatively recently, and compliance with the legislation has therefore required significant changes to the country’s waste management system and legislation in recent years. Croatia was late in adopting the national waste management Plan (WMP) and the waste prevention programme (WPP). A new draft WMP for the period 2016 – 2022 was prepared and the government planned to adopt it by the end of 2016. It has finally been adopted in January 2017. The WPP is an integral part of the new WMP.

**International agreements:** Croatia has signed and ratified almost all relevant MEAs. It has signed but not yet ratified the Offshore Protocol of the Barcelona Convention.

4. Croatia’s Implementation Tools for enhancing environmental policy

4.1. Green taxation
The Circular Economy Action Plan encourages the use of financial incentives and economic instruments, such as taxation to ensure that product prices better reflect environmental costs. The phasing out of environmentally harmful subsidies is monitored in the context of the European Semester and in national reform programmes submitted by Member States. In these way Croatia revenues from environmentally related taxes reached 3.86% of GDP in 2014 against an EU average of 2.46%. Energy taxes amount to 2.33% of GDP, well above the EU average of 1.88%. As shown in Figure 9, in 2014 environmental tax revenues accounted for 10.51% (up from 9.58%) of total revenues from taxes and social- security contributions (EU 28 average: 6.55%). This ranks Croatia second after Slovenia, significantly superseding the EU average. A 2016 study suggests that there is considerable potential for shifting taxes from labour to environmental taxes. Under a good practice scenario, it could add as much as HRK 3.55 billion in 2018 (EUR 0.47 billion) to the budget, rising to HRK 6.61 billion in 2030 (EUR 0.87 billion) (both in real 2015 terms). This is equivalent to an additional 1.04% and 1.67% of GDP in 2018 and 2030, respectively. The largest potential source of revenue could come from the increase in vehicle taxes. This accounts for HRK 2.96 billion in 2030 (EUR 0.39 billion) (real 2015 terms), equivalent to 0.75% of GDP. The next largest contribution to revenue might come from the amendments to the taxes on transport fuels. This accounts for HRK 1.2 billion in 2030 (EUR 0.16 billion) (real 2015 terms), equivalent to 0.3% of GDP.

Figure 5: Environmental tax revenues as a share of total revenues from taxes and social contributions (excluding imputed social contributions) in 2016

4.2. Green Public Procurement (GPP)
GPP is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured. The first National action plan for green public estimation of Croatian authorities envisages almost procurement for the period from 2015 – 2017 was adopted by the Croatian government in August 2015. The EU GPP criteria are recommended for the following product groups: copying and graphic paper, transport (motor vehicles), electricity, cleaning products and services, telecommunication services and mobile phones, office and IT equipment.
4.3. The contribution of EU funds

The European Commission has adopted a Partnership Agreement with Croatia in October 2014. It establishes a national strategy for the use of ESIF and mechanisms to ensure compliance with the European Union Strategy for Smart, Sustainable, and Inclusive Growth (Europe 2020 strategy). The largest amount of ESI Funds investment is focused on the thematic objective "Preserving and protecting the environment and promoting resource efficiency", accounting for over 20% of all the investments under ESI Funds. The biggest amount is allocated under the Cohesion Fund, EUR 1.65 billion, followed by the European Regional Development Fund, EUR 338 million. Under the European Agricultural Fund for Rural Development EUR 270 million are allocated for environmental measures and EUR 66 million under the European Maritime and Fisheries Fund.

These allocations will mostly be used for investments in the waste management, water supply and waste water collection and treatment infrastructure, nature and biodiversity protection and development of the tourism potential of natural areas. In the waste sector, investments are envisaged for the construction of waste management centres (WMCs), remediation of the locations highly polluted by waste (“hot spot”), remediation of the municipal waste landfills, and projects in the field of waste prevention and recycling. In the water sector several major projects are planned related to development/ construction/ reconstruction of water supply and/or wastewater systems. Additional attention will be paid to the protection and enhancement of biodiversity, nature protection and green infrastructure, and for the protection, restoration and sustainable use of Natura 2000 sites.

The expected impact of the investments in environmental sectors is the achievement of targets such as:

- 10 new waste management centres established and fully operational (2023);
- Share of municipal waste deposited onto or into land reduced from 83% (2012) to 35% (2023);
- Additional waste recycling capacity of 30,000 tonnes per year;
- Additional 1 million inhabitants served by improved water supply and improved wastewater treatment (2023);
- 40% of the Natura 2000 management framework in place Natura 2000 management framework in place as a basis for conservation actions according to the obligations in the acquis (2023);
- 358 hectares surface area of habitats supported to attain a better conservation status (2023).

Figure 6: European Structural and Investment Funds 2014-2020: Budget Croatia by theme, EUR billion
4.4. Effective governance and knowledge

Under the Accession Treaty, Croatia benefits from a number of environmental transitional measures, most of them still active. Current progress with meeting the transitional targets raises doubts as to whether Croatia will be ready to comply fully with the requirements of the environmental legislation, after the expiry of the transitional measures. This is especially the case for:

- reaching the final goal that maximum 35% of biodegradable municipal waste is landfilled, by 31 December 2020;
- gradual reduction of waste landfilled in non-compliant (substandard) landfills, all landfills to comply by 31 December 2018.
- Urban Waste Water Treatment Directive 91/271, gradual compliance with the requirements for collecting systems and treatment, final compliance by 1 January 2024.

Croatia’s transposition record is good. A small number of late transposition cases are solved at the early stage of the infringement procedure. The pressure from complaints and petitions is relatively low. Conformity checking is the Commission’s priority. In that respect, more investigations and potential non-conformity infringements can be expected. Croatia engages in constructive cooperation with the Commission with the goal of rectifying the non-conformities of national legislation and shows readiness to amend the legislation. However, Croatia often does not respect its own deadlines. The delays might be partly due to scarce administrative capacities of the ministries and burdensome and lengthy national legislative procedure. The recent governmental changes created additional delays in reaching conformity.

4.5. Access to information, knowledge and education
It is of crucial importance to public authorities, the public and business that environmental information is shared in an efficient and effective way. This covers reporting by businesses and public authorities and active dissemination to the public, increasingly through electronic means. The Aarhus Convention, the Access to Environmental Information Directive94 and the INSPIRE Directive together create a legal foundation for the sharing of environmental information between public authorities and with the public. They also represent the green part of the ongoing EU e-Government Action Plan. The first two instruments create obligations to provide information to the public, both on request and actively. The INSPIRE Directive is a pioneering instrument for electronic data-sharing between public authorities who can vary in their data-sharing policies, e.g. on whether access to data is for free. The INSPIRE Directive sets up a geoportal which indicates the level of shared spatial data in each Member State – i.e. data related to specific locations, such as air quality monitoring data. Amongst other benefits it facilitates the public authorities’ reporting obligations.

For each Member State, the accessibility of environmental data (based on what the INSPIRE Directive envisages) as well as data-sharing policies (‘open data’) have been systematically reviewed.

Croatia’s performance on the implementation of the INSPIRE Directive as enabling framework to actively disseminate environmental information to the public leaves room for further improvement. Croatia has indicated in the 3-yearly INSPIRE implementation report98 that the necessary data-sharing policies allowing access and use of spatial data by national administrations, other Member States’ administrations and EU institutions without procedural obstacles are still under development. Initiatives for setting up data sharing arrangements have been initiated trying to overcome identified barriers such as: public use limitations/restrictions, lack of human capacity, lack of licensing policy, pricing and funding policies.

Assessments of monitoring reports issued by Croatia and the spatial information that Croatia has published on the INSPIRE geoportal indicate that not all spatial information needed for the evaluation and implementation of EU environmental law has been made available or is accessible. The larger part of this missing spatial information consists of the environmental data required to be made available under the existing reporting and monitoring regulations of EU environmental law.

5. Concluding Remarks and Recommendations

Croatia is characterised by rich natural heritage, with an abundance of water, remarkable coastal waters, natural parks and diverse marine and terrestrial ecosystems. Croatia’s economic development depends largely on these resources and in particular tourism sector. However, the expansion of tourism has undoubtedly both a direct and an indirect impact on the environment which includes pressure on biodiversity, increase in waste generation and water and energy consumption. All these pressures need to be addressed adequately. Sustaining Croatia’s economic development depends essentially on effective natural resources management, increased investments and ensuring compliance with the EU environmental legislation. The most critical sector that needs urgent action is waste management. The transition to a more circular economy is slow and it will require strong involvement of policy-makers, business actors and consumers. The designation of Natura 2000 sites and implementing conservation measures represent a challenge as well.

According the above analysis, as Recommendations for Slovenia about further reforms in enhancing continuously the development in circular economy and resource efficiency, are given these activities:

- Critically review the effectiveness of its data policies and amend them, taking 'best practices' into consideration.
- Identify and document all spatial data sets required for the implementation of environmental law, and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services foreseen in the INSPIRE Directive.
Information is lacking for the period since Croatia’s accession to the EU in 2013, but in the period prior to accession Croatia had already put in place some risk assessment tools to prioritize and target inspections of industrial installations. However, these were incomplete and a need for a more strategic approach as well as for a more systematic performance evaluation was identified.

Up-to-date information is lacking in relation to the following:

- Data-collection arrangements to track the use and effectiveness of different compliance assurance interventions;
- The extent to which risk-based methods are used to direct compliance assurance at the strategic level and in relation to specific problem-areas highlighted elsewhere in this Country Report, i.e. air quality breaches and the pressures on water quality from diffuse water pollution;
- How the Croatian authorities ensure a targeted and proportionate response to different types of non-compliant behaviour, given indications that there is a low probability of being prosecuted and sentenced for environmental offences.

- Improve transparency on organisation and functioning of compliance assurance system and on how significant risks are addressed, as outlined above.
- Encourage greater participation of competent authorities in the activities of ENPE, EUFJE and EnviCrimeNet.
- While more time is needed for Croatia to implement the Environmental Liability Directive due to its later accession to the EU, Croatia should step up efforts in the implementation of the Environmental Liability Directive (ELD) with proactive initiatives, in particular by setting up a national register of ELD incidents and drafting national guidance. It should moreover take further steps to ensure an effective system of financial security for environmental liabilities (so that operators not only have insurance cover available to them but actually take it up).
- Strengthen the policy framework to speed up the uptake of the circular economy by all economic sectors.
- Croatia could benefit from strengthening the administrative capacity in the Ministry of Environmental and Nature Protection, as this would affect positively the use of EU Funds and speed up the alignment with the EU environmental policies and legislation.
- Focus more effort on implementation of the separate collection obligation to increase recycling rates. Introduce and gradually increase landfill taxes to phase-out landfilling of recyclable and recoverable waste. Use the revenues to support the separate collection and alternative infrastructure in conjunction with a use of the cohesion policy funds to the first steps of waste hierarchy. Investments in the infrastructure for the treatment of residual waste should be carefully planned in order to avoid building excessive capacity.
- Undertake a review of the extended producer responsibility schemes to improve their effectiveness.

**D. MACEDONIA**

**1. Introduction**

The circular economy is an attractive, smart and innovative concept, promising the efficient use and reuse of resources and a strong business case. It is a sustainable development strategy that is being proposed to tackle the problems of environmental degradation and weaken the dependence of economy on natural resources and environment. Through embedding the 3R principles of materials
use Reduce, Reuse and Recycling into production and consumption process, the Circular Economy aims at greater resource productivity, higher energy savings and lower greenhouse gases emission. Several different approaches that encourage the transition to a circular economy exist. Among them, the approaches to closing material loops and use the product as a service system in a circular economy are developing most intensively and till now many innovative business systems and models proved effective in delivering resource efficiencies, both, within the manufacturing process and at the end of product life. The transformation is a complete systematic change comprising of innovation in technological and organizational terms too. By helping to decouple economic growth from resource use the transformation to circular economy offers a prospect of sustainable growth that will last. The majority of reported initiatives on the circular economy is targeted at waste and secondary raw materials, whereas only few countries have explicitly commented that Circular Economy requires going beyond increasing recycling rates and a higher use of the secondary raw materials by utilization of different innovative approaches that have to be combined and implemented across the whole supply chain.

For a successful transition from linear to circular economy the following three requirements will have to be considered at least:

- The disposal sector, as it is established today, will have to rethink itself and towards a cleaner collection of products. This goes beyond the discussion on mono-material collection. For example, there might be an emerging market for collecting components and reselling them, which is not the standard today.

- A standardisation and modularisation of components will have to be provided so that a product design which allows easier disassembly will be created.

- Business models will have to be re-innovated. There will be a shift from product ownership to product usage (Technopolis group, 2016).

How should this circular economy develop to the stage where whatever is done works effectively and well in case of the Republic of Macedonia? This question requires further examination and research of the issues related to sustainability of economy. Such an investigation has not taken place, especially in the Republic of Macedonia. There is a need to explore this in aspect of the efficiency resource and waste management.

As a low-input, high-recycling, high-efficiency, high-technology and industrialized set of practices, ‘circular economy’ could create jobs, foster rural youth employment, mitigation and gender mainstreaming. The public benefits that could accrue from the circular economy perspective have become compelling. Nevertheless, the question arises: “At what level are we? Does the country go toward the development of the circular economy and waste management or not?”

Regarding these questions and the importance of taking the benefits from circular economy, we made an analysis that give the answers about the current status, the needs, the benefits, the effects and obstacles of circular economy. The results will help in creating goals, strategy and measures for their implementation.

2. Methodology
The study involved a field survey conducted in January-March 2018, by applying a self-administered questionnaire which was distributed among the managers and employees in
companies in Macedonia, Latvia, Slovenia and Croatia. The survey contained questions on the level of existence of circular economy and waste market in each country. The aim was to collect data and to examine the behavior of all entities and its opinion about current situation of circular economy and waste market. Analysis of the data was conducted with a focus on what business entities in Macedonia, Latvia, Slovenia and Croatia do about implementation of circular economy and developing the waste market? In the basis of these questions is to understand what are the needs, the effects, the obstacles and the benefits from circular economy? As a result of answer – what kind of strategy and measures should be taken in each mentioned country? We used the SPSS econometrics software to process the collected data.
2.2. Discussion of the results

Using SPSS econometrics software to process the collected data, the tables above show the current situation in conducting circular economy and developing waste market. This analysis take the countries, industries and mechanism as independent variables and believes as depended variables because the survey explore the attitude, knowledge and situation in business entities given by managers. Table 4 which present model summary confirm that the model is well set as the variables due the values of R and Adjusted R Square that are less than 1 (0.615 and 0.364 respectively). Table 7 show that any change in industries, regulative or mechanism will affect the believes. This evaluation show that Macedonia is on low level in developing circular economy and waste market. The leader is Latvia among these four countries, than is Slovenia, third is Croatia and Macedonia is on basic level. Correlation of the results show that major problems of circular economy and waste management and constrains in the Republic of Macedonia are present in almost all areas and in all relations in the society: policy and legislative framework; organisation of institutions and human resources, cost recovery and financing of services and investments, stakeholder awareness and communications, all phases of technical management from collection to final disposal of waste, existence/remediation of environmental burdens, impact on public health and living/natural environment with the potential impact on the Macedonian economy.

So the present waste management situation in Macedonia can be characterised as sub-standard with regard to human and financial resources, as well as insufficient and ineffective with regard to monitoring and enforcement, resulting in various dysfunctional systems in society and in many related negative effects on the environment and public health.

Also the results confirm theoretical answers that the recovery and recycling activities for municipal waste are very limited and without any organised approach. Mostly the informal sector and private companies deal with collection and recycling of potentially recyclable materials such as metals, paper, plastics, car batteries and accumulators, waste oils etc. in scrap yards with potential impacts on the environment and public health. The recycling market for plastic in Macedonia is underdeveloped. However, there is a well-established network of collectors and/or brokers, as well as a strong and stable market for recovered scrap metals.

Further, the correlation explains the economic issue in this research. Sources for the cost recovery and financing of waste management operations are mainly direct charges for transport and disposal of waste. Fees for municipal waste management services are invoiced and collected directly by the public communal enterprises, they are based on flat rates that vary between municipalities, fee levels are low and the proportion of non-payers is frequently high. Flat rate fees for collection and disposal of commercial and industrial waste are charged by the public enterprises, mostly at higher tariffs than for the municipal solid waste. Real costs of service delivery are not fully recovered and the regulation of the system does not enable the “polluter pay” principle to be enforced. The financial situation of public enterprises is getting worse, additionally due to the decline of the economic growth in Macedonia. Environmental charges defined in the Law of Environment are not earmarked and thus become a part of the integral State’s budget which is not a problem in Latvia, Slovenia and Croatia.

The analysis of the key problems related to the existing waste management situation in Macedonia show that the main problems and constrains are focused almost on all areas related to the development of the waste management system and its role in the society:
- Policy and legislative framework;
- Institutional/organisational arrangements;
- Human resources/capacity;
- Financing/cost recovery and investments;
- Stakeholder awareness and communication;
- Data availability/reporting;
- Waste avoidance and reduction;
- Waste recovery and recycling;
- Waste segregation, storage, collection and transport;
- Waste treatment/processing;
- Final disposal of waste and remediation of environmental burdens;
- Impact on public health and living/natural environment with the potential impact on the Macedonian economy.

The analysis of these problem areas shows that the present waste management situation in Macedonia can be characterised as sub-standard regarding human and financial resources, insufficient and inefficient regarding monitoring, as well as hampered by political and social lacks (like execution of enforcement, stakeholders consultations, public awareness) resulting in various dysfunctional systems in society and in many related negative effects on the environment and public health.

The results also confirm that people in Macedonia have basic knowledge for circular economy in some cases got it from media, but no education is offered and there is a lack of understanding of the importance for circular economy as a manner for economic growth and development. The most of the people don’t know about the waste management nor the legislative. The general level of environmental awareness within Macedonia is low, and there is an insufficient understanding of environmental issues. Actually, people are not aware of waste problems and of the adverse effects on their health and living/natural environment. People and industries are not aware of the potential risks of hazardous waste. People are not aware of their own responsibilities and their role as producers of waste and actors on waste reduction. To a large extent, the increasing amount of generated waste is the result of uninformed consumers as well as of their behaviour and choices. There is limited knowledge as to what a sanitary landfill, designed and operating to contemporary standards, really means and the people are used to and accept non-legal dumping of waste. There is also a lack of understanding of the importance to pay for waste collection and disposal services; a high percentage of the population does not pay any fees for waste collection and landfill.

There is the absence of a national public awareness communication strategy on waste issues; however, insufficient institutional capacities can not promote of the public awareness and environmental education Communal public enterprises are suffering from lack of finance and obsolete waste collection equipment, and do not pay, with few exemptions, attention to public awareness and education.

Adverse of Macedonia, it’s not a case in Latvia. The access for information, education, knowledge is on high level. The public institutions and academic institutions work on the strategy that it is of crucial importance to the public and business that environmental information is shared in an efficient and effective way. This covers reporting by businesses and public authorities and active dissemination to the public, increasingly through electronic means.

In Macedonia in more than need initiatives and financial support for establishing comprehensive programme and education which will create efficient human resources for developing strategies that will boost the host economy through greater resource productivity, higher energy savings and lower greenhouse gas emissions and creation of local jobs and opportunities for social integration as well
3. Conclusion and Recommendations

According the results the development of circular economy, enhancing the efficiency of resources
as improvement of waste market in the Republic of Macedonia will require further approximation of the national legislation with the EU one, changes in institutional organisation and in general waste management practice. Successful changes in waste management can be initiated by the Government by setting strategic objectives and goals of the contemporary waste management practice taking into account existing environmental damage and by using its legislative and regulatory power; but final success in practice can only be reached if all members of society understand the relationship between non-proper waste management and adverse effects on the environment and public health, if they become aware of their responsibilities, obligations and tasks in waste management, and if they are encouraged by organisational and in particular by economic measures.

Newly established infrastructure facilities shall represent the reliable technical basis for waste management operation, enable additional technological and spatial expansions and, as far as possible, retain a degree of operational flexibility. Financing of the set-up of the new waste management system as well as of the remediation of environmental burdens shall be carefully considered. Coverage of capital investment costs and operational costs is an important factor for a country with 2 million inhabitants and with small streams of waste where the effect of economy of scale is especially exhibited regardless of the waste recovery, treatment or final disposal process.

Other specific issues of the waste management system are almost complete absence of the private sector, limited local markets for materials and products recovered from waste, no economic encouragement for investment in facilities for energy recovery of waste. The low living standard of the average population and difficult financial situation of the production sector represent another constraint to a faster approach of the full application of the “polluter pay” principle. Substantial costs are needed for the necessary closure and/or reclamation activities of old or abandoned municipal and industrial dumpsites, in particular “hot-spots”. However, the system funds necessary for (co-)financing the remediation of some “hot-spots” in general is not available because of stopped production and unclear legal heritage.

Public perceptions of the waste management issues can be manifested as strong opposition to necessary changes of behaviour because of genuine fears and concerns, because of a lack of information and understanding or because of distrust of the new system solutions due to historical reasons. Fundamental strategic achievement regarding public perceptions of waste management shall be the qualitative shift in the understanding of the waste problem as a whole.

Overall strategic goals and objectives shall reflect the commitments of all parts of Macedonian society with regard to the significant, equally important and closely interrelated changes in circular economy and waste management:

- harmonisation of the **policy and legislation** on waste management regarding the political agreement in the society and requirements of the co-operating economic environment;
- establishment of effective **institutional and organisational arrangements** in all phases of implementation of the new integrated waste management system: planning, permitting, financing, operating and enforcement;
- strengthening **human resources** and capacity in the public and private sector involved in the establishment process of the waste management system, as well as encouragement and engagement of knowledge, technical know-how and economic potential available in the country;
- introduction of stable **financial resources** and adequate **economic mechanisms** to assure the full cost recovery of providing for the integrated waste management system according to the "polluter pays" principle and to the maximum effects regarding investment and operational activities;
- raising **public awareness** and **awareness of all stakeholders** in the society from the viewpoint of understanding their roles, responsibilities and obligations in the waste management process and in the protection of the environment in order to accept
significant changes of the waste management practice from collection to the final disposal.

- establishing the **data collection/information system** on the sources, nature, quantities and fate of waste streams as well as on the facilities for material/energy recovery and final disposal of waste and assuring necessary public access;

- establishing the **contemporary technical waste management system** which takes into account different technical options regarding waste avoidance, lowering their hazardous potential and reduction at sources, material/energy recovery and utilisation of waste and safe final disposal of stabilised residues according to “best practicable environmental option” with the aim of preservation of non-renewable natural resources and minimal emissions and adverse effect of the waste treatment/disposal processes on the living and natural environment as well as on public health;

- application of **efficient and cost-effective techniques** for the management of segregated waste streams by means of private sector participation to achieve a 100% waste collection rate and optimal level for material/energy recovery of waste;

- introduction of **landfills for hazardous and non-hazardous waste** and other facilities for final disposal of waste compliant with contemporary standards to prevent the appearance of new environmental burdens;

- progressive **closing down and/or remediation of existing municipal dumpsites** and/or **industrial “hot-spots”** according to the inventory of environmental burdens and corresponding criteria that particularly take into account adverse effects and risks to the environment, future utilisation of physical space, costs of rehabilitation, and acceptability by the population

Institutional and organisational measures and roles of the main stakeholders for the implementation of activities/reforms:

1. **Strengthening of institutions on a national level.** Institutional reorganisations and strengthening, additional and well trained human resources as well as good co-operation and harmonisation between sectors on the national level shall be required in order to implement the Waste Management Strategy, with regard to the legislative, institutional and organisational tasks, technical and economic/financial measures and public awareness projects, as required on the one hand, and with regard to the development and implementation of monitoring, supervision and enforcement mechanisms related to the operation of waste generators and waste management infrastructure facilities on a national and local level (municipal waste management in disposal facilities, industry, other waste generators) on the other hand.

2. **Strengthening of institutions on a local level.** Municipalities are in principle responsible to provide for the proper management and disposal of municipal waste on behalf of their inhabitants. By accepting the regional level of solving the municipal waste issues, municipalities shall appoint and train responsible persons for activities related of the establishment and operation of regional systems of the municipal waste management from the legal, organisational and financial viewpoint.

3. **Tasks, obligations and responsibilities of the manufacturing and business sector.** Manufacturing and other business sectors, authorised public service enterprises and other waste management operators according to their licences and/or permits shall take technological and organisational measures for prevention, recovery and recycling of waste, ensure proper handling, monitoring and reporting on waste management by performing the own financial and organisational measures or establish the own organisational schemes for management of special waste streams by application of voluntary agreements or, engage the licensed service enterprise.

4. **Tasks, obligations and responsibilities of the inhabitants** Inhabitants shall collect municipal waste fractions according to the municipality programmes; they shall contribute to the correct relations between executed services and payments for them and become the interested party regarding investment in new waste management facilities.

5. **Tasks, obligations and responsibilities of the non-governmental institutions** The main role of non-governmental organisations may be in lobbying on planning and environmental issues as well as in
dissemination of a variety of environmental information.

6. **Tasks, obligations and responsibilities of the educational and scientific institutions**. The main contribution of universities and other research institutions may be in the execution of technical and environmental research, analyses and applications as well as in the understanding and interpretations of different interrelated environmental parameters.
7. In order to promote the development of economical mass and energy efficiency, and their environmental efficiency, economic measures have to address all economically significant activities: consumption, processing, production and exploitation of natural resources. Economic measures can achieve positive effects in a country under the following conditions: known economic value of the environment, given limits of exploitation of natural resources, internalization of external costs in products given on the market and implementation of the “polluter pay” principle.

8. **Involvement of private sector**. Private sector participation in the waste management system shall be established as a partnership between the public and private sector for the purpose that public services and investments in the infrastructure can be provided and operated in the most economically efficient manner by means of the optimal exploitation of private sector skills and resources. The licensed private sector may be involved in waste management of institutional, medical, commercial and industrial waste management expecting high quality and efficient services.

**Benefits from implementation of recommendations**

The achievement of strategic objectives set out towards overcoming present waste management problems and deficiencies shall require a broad scope of measures to be implemented continuously and over a long-term period of more than 20 years. Criteria for selection of the priority measures and actions are based on a model, which expresses the logical order for the implementation legal requirements:
- providing human resources and organisational structures;
- preparation of the policy and regulative documents and plans;
- preparation of technical and investment documentation;
- set up the support systems, particularly public awareness and financial support;
- realisation of investments in the basic infrastructure for waste management.

All of these will enhance:
1) Comprehensive concordance between Ministries, especially the Ministry of Environment and Regional development and the Ministry of Economy, should be established. That is a principal precondition for life cycle thinking and circular economy based industry and business development. As circular economy concept includes both waste management and eco-design oriented industry development, they should be realized under the supervision of both Ministries.
2) Development of cooperation between state and industry, including various support measures from the state, as well as development of industry related NGO institutions.
3) Further development of Green public procurement should have a principal catalytic impact due to promoting influence to eco-design successful implementation. Reversely, any obstacles for Green public procurement could endanger the CE development.
4) Facilitation of feasibility studies and research activities and projects focused on eco-design understanding in Macedonia and necessary measures for successful eco-design development in country. Discovering and promoting successful examples of circular economy implementation in education and society in general.
5) Widespread implementation of circular-economy approaches would require deep transformation of production chains and patterns of consumption.
6) Regional unemployment disparities may be reduced by a broad geographical spread of employment opportunities in circular economy activities, which will be of particular benefit in higher unemployment regions.
7) Occupational mismatch may be reduced by new opportunities across all skill levels.
8) More extensive development of the circular economy, involving more remanufacturing, servitisation and repair, could create employment near existing manufacturing sites where unemployment tends to
be higher. This may also draw on the large pool of unemployed, former employees of manufacturing industries in these areas.

9) The circular economy can also contribute to offsetting the disappearance of mid-level occupations. Sectors which provide mid-level employment, such as remanufacturing and closed loop recycling, offer potential routes to addressing the disappearance of mid-level occupations.

10) Furthermore, if the circular economy were to be developed extensively, there could be a significant need for some types of higher skilled employment.

11) The access for information, education, knowledge will be on high level. The public institutions and academic institutions will work on the strategy that it is of crucial importance to the public and business that environmental information is shared in an efficient and effective way. This covers reporting by businesses and public authorities and active dissemination to the public.

12) Establishing comprehensive programme and education which will create efficient human resources for developing strategies that will boost the host economy through greater resource productivity, higher energy savings and lower greenhouse gasses emission and creation of local jobs and opportunities for social integration as well.
PART IV: ANALYSIS OF THE CONDUCTED QUESTIONNAIRE SURVEYS WITH CONCLUSIONS

LATVIA

1. Introduction
The Survey was conducted in a two-month period from late January to early April 2018. The survey was done among the managers and employees of companies in Latvia. The research consists in implementing the methodology of a standardized questionnaire, that is, a closed-type questionnaire with offered modalities on which they can give a single answer. The 31 companies surveyed, 8 belong to the category - large enterprises, 13 belong to the category - medium-sized enterprises and 10 are small-type enterprises.

The questions cover two areas:

1. The first research field, covers 3 questions relating to the general knowledge of the enterprise - the activity it deals with, the category to which it belongs and the number of employees in the firm, and 4 questions that are made to the waste produced by the firms that are surveyed - what is the quantity and type of waste they produce, where they store, their knowledge or ignorance about what could be produced from their waste and whether they have or not professional staff for waste management,

2. The second research area, covers 13 for example questions related to the circular economy, from which one can find out which are the general knowledge of the Circular economy, do they understand either the lack of the function and the function of the Circular economy, the exiting level of knowledge of legal framework, whether the Circular economy has an important role in the market societies as well as whether the Circular economy should have a high state priority.

The survey was done by interviewing two people (questionnaire and questionnaire) by asking questions of a selected sample according to a pre-prepared questionnaire. The questions are of closed type, with offered answers and with the right to complete one answer.
2. Research objectives

Latvia is one of the countries in Europe with the richest biodiversity, established traditions for the protection of nature, various ecosystems and fertile areas. However, waste management, and in particular recycling, remains among the challenges for Latvia, which requires strong efforts to achieve the European Union average.

The main purpose of the research is to process the collected data, with a table view of the analyzes obtained, to demonstrate the general knowledge and practices of the business sector in Latvia for the Circular economy.

The companies from all three categories (large, medium and small) are selected in order to compare their answers and analyze whether their views and opinions about the Circular economy are different.

Through this research, conclusions will be drawn through which aims to raise awareness among the private sector about the importance of the circular economy and open opportunities for the level of knowledge and cooperation between the business community, educational institutions, research organizations and the government sector.

The purpose of the research is to encourage the state sector, through the obtained data and analyzes, to engage and support (financial assistance, human resources, etc.) circular economy as a new economic model.

Also, the purpose of the research is to encourage the transition from Linear to Circular economy (product-waste product), to reduce waste generation and to encourage its use by recycling and creating a new product or energy.

3. Methodological approach

In Latvia, a number of measures are being taken to improve waste management and its recycling and waste collection and reduction in landfills. However, the European Union-funded Roadmap Action Plan focusing on resource efficiency has not yet been implemented by Latvia.

The general assumption for Latvia as a Member State since the year 2004, is that in general the state is below the European Union average in the development of the Circular economy and the Waste market.
Latvia has implemented more eco-innovations, but the speed of the development of the Circular economy, largely depends on financial resources, the low flow of knowledge and cooperation between the business community, educational institutions, research organizations and the government sector, leads to low awareness of this model the economy.

If research on the Circular economy is expanded and projects are being developed, the achievements are in progress and hopefully the level of awareness will be raised both in the business sector and consumers and state authorities about the importance of the new model of the economy. Marketing initiatives and campaigns are also important for raising awareness of the benefits of the Circular economy.

4. Results and discussions
The processing and analysis of the collected data is performed according to the predetermined order:

1. the questionnaires will be sorted and selected by the category of enterprises;
2. the results obtained from the survey will be analyzed and the display tables will be prepared;
3. statistical conclusions will be drawn;
4. a final survey report will be compiled.

The Survey was conducted on 31 enterprises, 8 companies belong to the group of large, 13 in the group of medium and 10 are in the category of small enterprises. The same questions were posed to all surveyed enterprises.

All responses will be analyzed individually and separately in each group separately.

Chart 1: Enterprise category
From the Chart 1, it is obviously clear that the Survey was created equally to include all three categories of enterprises.

The goal is to make a comparison and analysis of their answers and to determine whether the answers differ or do not differ with each other.

The numbers of 8 out of 31 surveyed enterprises belong to the category of large enterprises, 13 are medium-sized enterprises, and the remaining 10 are in the category of small enterprises. All surveyed enterprises have a different business activity.

When asked – *Whether you know what a Circular economy is*, three answers were offered: "YES", "NO" and "VERY LITTLE".

The analysis showed that (see Table 1), only 32.2% of surveyed enterprises, or 10 out of 31 companies, answered that they know what a Circular economy is.

However, one should not neglect the fact that 17 out of 31 surveyed companies, or almost every second of companies (31/17 = 1.76) know very little about the term Circular economy.

It has to be stressed that the private sector in Latvia does not know enough Circular economy.

**Table 1: Do you know what a Circular economy is?**
Do you know what a Circular economy is?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>3 (37,5%)</td>
<td>5 (38,4%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>VERY LITTLE</td>
<td>4 (50%)</td>
<td>6 (46,1%)</td>
<td>7 (70%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (12,5%)</td>
<td>2 (15,3%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>8</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>

In order to get a clearer picture of the general knowledge of the Circular economy, the surveyed enterprises were asked the following question as to where, from where the enterprises draw on the knowledge of the circular economy. The surveyed companies were offered 4 responses with the right to one response (see Table 2).

The analysis of the answers received showed that the surveyed companies received the most knowledge of the circular economy from the business community (almost half of the surveyed companies or 15 out of 31 gave the answer for the business community).

Nearly every fifth company (31/7 = 4.42) responded that for Circular economy information is received in everyday activities, and the same companies reported that information on the circular economy is derived from literature (read in magazines, daily newspapers, papers and other types of literature).

Only 2 companies responded that information on the circular economy was received from NGO sectors and from government institutions. This is another indicator, in order to activate the NGO sector and government institutions in the future in promotion and actualization of the Circular economy, as a new model of economy on the world market.

Table 2: Where do you find your knowledge of the Circular economy?
Where do you find your knowledge of the Circular economy?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>From everyday activities</td>
<td>4 (50%)</td>
<td>1 (7,6%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>From scientific sources</td>
<td>1 (12,5%)</td>
<td>3 (23%)</td>
<td>3 (30%)</td>
</tr>
<tr>
<td>From Business community</td>
<td>2 (25%)</td>
<td>9 (69,2%)</td>
<td>4 (40%)</td>
</tr>
<tr>
<td>NGO and Government institutions</td>
<td>1 (12,5%)</td>
<td>/</td>
<td>1 (10%)</td>
</tr>
</tbody>
</table>

The level of knowledge about the term Circular economy and whether the companies in Latvia understand the essence and function of the Circular economy, it is learned from the next question where 3 answers were answered "YES", "NO" and "INSUFICIENT" and each of the companies was entitled to one answer.

Table 3: Do you understand the essence and function of the Circular economy?

<table>
<thead>
<tr>
<th>Do you understand the essence and function of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>4 (50%)</td>
<td>7 (53,8%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (12,5%)</td>
<td>1 (7,6%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>3 (37,5%)</td>
<td>5 (38,4%)</td>
<td>8 (80%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>8</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>

The analysis of the summarized answers showed that most of the companies (as many as 16 out of 31 surveyed companies) answered that they unequivocally understand the essence and function of the Circular economy.
Although 38.7% responded that they understand the essence of the circular economy and only 3 of the companies have declared themselves to be negative, but the fact is that the results showed that every second company \((31/16 = 1.9)\) insufficiently understand the Circular economy, its essence and the way which works.

The Circular economy is an alternative to the traditional linear economy.

It implies, the disposal of resources as long as possible, their further recycling and renewal and their reuse as a product or material. The Action plan of the Circular economy determines specific targets and measures for waste material. Therefore, the following questions were posed exactly to the waste produced by the surveyed enterprises.

The answers provided showed that the surveyed enterprises create a huge amount of waste, which counts in several tonnes (especially for companies that fall into the category of large enterprises). When asked - *Where do you store the waste?* - the companies answers as follows:

**Table 4: Where do you store the waste?**

<table>
<thead>
<tr>
<th>Where do you store the waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>In different places</td>
<td>2 (25%)</td>
<td>2 (15,3%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>On the exact area</td>
<td>6 (75%)</td>
<td>9 (69,2%)</td>
<td>6 (60%)</td>
</tr>
<tr>
<td>On the waste place</td>
<td>/</td>
<td>2 (15,3%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>8</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>

The displayed results in the Table 4 show that companies mostly store their waste in exactly certain places. This is an indicator that Latvian companies have somehow solved the issue of waste storage, which is one of the conditions for the implementation of the Circular economy. Waste management, its transportation, recycling of waste, the production of new material and re-consumption fall into the complex process of the Circular economy.
The next question was followed by the next question, which is also important for the research. The 18 out of 31 surveyed companies (see Table 5) stated that they know what can be produced from their waste, but the percentage of 41.9% is high, who answered that they do not know what to do with their waste.

Table 5: Do you know what can be produced from your waste?

<table>
<thead>
<tr>
<th>Do you know what can be produced from your waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>5 (62.5%)</td>
<td>8 (61.5%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>NO</td>
<td>3 (37.5%)</td>
<td>5 (38.4%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>8</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>

The number of surveyed companies is small, however, for future research it should be taken into consideration the fact that the private sector in Latvia is not very familiar with whether the waste they produce can be recycled.

Of course, it cannot be disregarded also from the analysis that even 83.8% (or 26 out of 31 companies) do not have professional staff for dealing with waste, and only 5 of them or almost every sixth (31/5 = 6.2) a certain firm has specialized personnel that transports the waste to certain places.

In the future, when implementing the Circular economy in Latvia, this should be taken into account, especially since this type of economy creates economic value by using more labor and less waste.

In the context of the aforementioned, it is important to be stressed on the analysis of the question, which is whether they have key performance indicators related to the Circular economy. The companies answered the question with "YES" or "NO", considering whether they have or do not have key indicators for the success of the circular economy in their firms.

Even 23 companies responded that they did not have indicators of the success of the circular economy in their firms, and every fourth surveyed company responded positively to the issue. It can be rightly concluded that the private sector in Latvia is still not capable of establishing the Circular economy, perhaps due the level of knowledge and cooperation.
The next question posed to the surveyed companies concerned the main motives they have in the market approach to the Circular economy. As an option they were offered several answers and each company was entitled to one answer.

From 22 out of 31 surveyed companies (or 70.9%) answered that the main motive in the market approach to the circular economy is reduction of waste and creation of landfills (especially in urban areas). The high percentage shows that the companies are aware that, in order to profess the Circular economy in Latvia, it is necessary to provide premises first of all, where the waste they produce will be stored, so that it can be further processed and recycled.

The analysis showed that the companies do not have key indicators of success with the Circular economy, and in order to see the problems, the following question was asked in detail, through which it was necessary to determine what the real threats appear in the circular economy.

Again, they were offered several response options. Almost half of the surveyed enterprises (45.1%) said that limited resources and supply of resources were the main threat in order for the circular economy to fail, while every third company or 29% of companies consider that competition and its maintenance can represent a real threat to the Circular economy.

Only 8 companies responded that fluctuations in prices could be the main reason for not being able to build a new concept of economy. Statistical indicators of the survey show that almost half of the polled companies in Latvia think that circular economy can only be revived if there are sufficient resources that would contribute to the economy of the product-waste product (see Table 6).

**Table 6: What are the real threats that appear in the Circular economy?**

<table>
<thead>
<tr>
<th>What are the real threats that appear in the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited resources and supply of resources</td>
<td>4 (50%)</td>
<td>7 (53.8%)</td>
<td>3 (30%)</td>
</tr>
<tr>
<td>Fluctuation in the cost of resources</td>
<td>2 (25%)</td>
<td>2 (15.3%)</td>
<td>4 (40%)</td>
</tr>
</tbody>
</table>
Circular economy promises great opportunities for the private sector (from increasing productivity and increasing profits to saving the environment by reducing waste).

The surveyed companies were offered several options that could arise as factors that would hinder the enterprise itself to realize the Circular economy.

Most of the surveyed companies (13 out of 31 companies or 41.9%) believe that the lack of a legal framework for circular economy can be the main factor in not applying the Circular economy to their companies. However, every fourth company (31/8 = 3.87) does not know at all which factor would cause the Circular economy to be applied in their company.

Small percentage is the percentage of companies that gave the answer that the lack of a legal framework can be the main factor in order not to apply the Circular economy, but the fact that the offered answers mostly voted for that option should be an indicator of future research and data which would serve in building the strategy for the Circular economy.

Contrary to the previous question, where the factors that would hinder the enterprise itself to realize the circular economy were analyzed, the next question analyzed the question of which factors would help for the further development of the circular economy.

From the surveyed companies, most of them, or 10 out of 31, answered that enabling a legal framework would be the main factor that would help further the development of the circular economy, and 9 out of 31 surveyed companies believe that greater co-operation with other industries will develop the Circular economy. And here it should be noted that the number of surveyed companies is small, but statistical data should be indicative of the further development of the Circular economy.

One of the most important questions asked by companies was how much they believe in the possibility, through the Circular economy, to increase their profits within the organization. The 5 responses were offered, with the right to one answer.
From the table below (see Table 7), it is clearly stated what the attitude of the surveyed companies towards the Circular economy is. Perhaps they do not know the essence of the Circular economy, but more than half or 53.3% (16 out of 31) believe that the circular economy will provide profit to their organization. Only one company believes that the Circular economy can increase profits, but only in the short term, and every fifth surveyed company believes that by reviving the Circular economy, it will not make a profit in its company.

Table 7: Do you think that the circular economy will allow increasing profits in your organization?

<table>
<thead>
<tr>
<th>Do you think that the circular economy will allow increasing profits in your organization?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES in the long run</td>
<td>7 (87,5%)</td>
<td>4 (30,7%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>YES in the medium run</td>
<td>/</td>
<td>1 (7,6%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>YES in the short run</td>
<td>/</td>
<td>/</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>4 (30,7%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>1 (12,5%)</td>
<td>4 (30,7%)</td>
<td>1 (10%)</td>
</tr>
</tbody>
</table>

The Table 8 gives the data on the Legal framework of the circular economy in the private sector. Three responses were offered, with the right to chose one answer.

Table 8: Do you know the legal framework of the Circular economy?
Do you know the legal framework of the Circular economy?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>1 (12.5%)</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>NO</td>
<td>2 (25%)</td>
<td>4 (30.7%)</td>
<td>4 (40%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>5 (62.5%)</td>
<td>9 (69.2%)</td>
<td>6 (60%)</td>
</tr>
</tbody>
</table>

The analysis showed that the legal framework of the private sector's Circular economy in Latvia is insufficiently known or unknown at all. Almost every second surveyed company reported that it is not familiar with the legal framework of the Circular economy, 32.2% said that they did not know the legal framework at all, and only 1 company answered positively.

The transition from linear to circular economy, in the future requires the private sector to have more knowledge about the circular economy, as a new concept that will positively affect the economy and the environment.

The data showed that the private sector in Latvia has elementary knowledge about the Circular economy, for these reasons, in order to increase the lack of knowledge in the future, the relationship between educational institutions, research organizations, the business structure and the government sector should be intensive.

The next question that was analyzed gave an answer as to whether and how much circular economy has an important role in market societies. 4 respondents were offered to the surveyed enterprises.

Table 9: Do you think Circular economy has an important role in market societies?
Do you think Circular economy has an important role in market societies?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td>6 (75%)</td>
<td>7 (53,8%)</td>
<td>3 (30%)</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>NOT ENOUGH</strong></td>
<td>1 (12,5%)</td>
<td>1 (7,6%)</td>
<td>3 (30%)</td>
</tr>
<tr>
<td><strong>DO NOT KNOW</strong></td>
<td>1 (12,5%)</td>
<td>5 (38,4%)</td>
<td>4 (40%)</td>
</tr>
</tbody>
</table>

What is important to be stressed in the Table 9 is that more than half (16 out of 31 surveyed companies) think that Circular economy has an important role in market societies and no firm has a negative attitude on this issue. This is a good indicator that companies have a positive approach to the Circular economy.

This question was followed by the next question, and it concerns whether and how many of the surveyed companies think that the Circular economy should have a high state priority.

The numbers of 5 types of response were offered here and the companies have one on choice to answer.

**Table 10: Do you think that the Circular economy should have a high state priority?**

<table>
<thead>
<tr>
<th>Do you think that the Circular economy should have a high state priority?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>An extremely important priority</td>
<td>/</td>
<td>/</td>
<td>1 (10%)</td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td>6 (75%)</td>
<td>6 (46,1%)</td>
<td>7 (70%)</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>VERY LITTLE</strong></td>
<td>2 (25%)</td>
<td>5 (38,4%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td><strong>DO NOT KNOW</strong></td>
<td>/</td>
<td>2 (15,3%)</td>
<td>1 (10%)</td>
</tr>
</tbody>
</table>
The analysis shows that, except that the business sector believes that the Circular economy has an important role in market societies, it considers that there should be a high state priority. 61.2% of the surveyed companies said that the Circular economy should have a state priority, and none of them does not think that is contrary to that.

The analyses presents that the Latvian business community has a positive approach to the Circular economy and as a new concept of economy, it should be a priority for the state, because it plays an important role in market societies.

The last question, which was asked and analyzed, relates to the mechanisms through which the circular economy would be promoted. Several response options were offered and each surveyed company was required to indicate mechanisms that could promote the Circular economy.

Most of the respondents or (14 out of 31 companies) answered that the creation of higher education staff in the field of circular economy would be the first mechanism that could promote the circular economy, while the creation of a national strategy would be the second mechanism for the promotion of the Circular economy.

Such statistical indicators should be taken into account when implementing the new model of economy, although the number of companies that are polled is small.

**Summary and conclusions**

The Survey found that the private sector has general knowledge about the circular economy. The number of surveyed companies is small (only 31 companies are included in the survey), however, the data show that only 32.2% of the surveyed enterprises, or 10 out of 31 companies, answered that they know what a circular economy is and 38.7% answered that they understand the essence of the Circular economy.

However, it is a fact that the results showed that every second company (31/16 = 1.9) insufficiently understands the circular economy, its essence and the way it works.

Regarding the waste material they create, 18 out of 31 surveyed companies said they know what can be produced from their waste, but the percentage of 41.9% is high, who answered that they do not know what to do with their waste.
The 22 out of 31 surveyed companies (or 70.9%) answered that the main motive in the market approach to the Circular economy is reduction of waste and creation of landfills (especially in urban areas).

The high percentage shows that the companies are aware that, in order to profess the Circular economy in Latvia, it is necessary to provide premises first of all, where the waste they produce will be stored, so that it can be further processed and recycled.

Most of the surveyed companies (13 out of 31 companies or 41.9%) believe that the lack of a legal framework for circular economy can be the main factor in not applying the circular economy to their companies. However, every fourth company (31/8 = 3.87) does not know at all which factor would cause the Circular economy to be applied in their company.

Small percentage of companies answered that the lack of a legal framework can be the main factor in order not to apply the Circular economy, but the fact that the offered answers mostly voted for that option should be an indicator of future research and data which would serve in building the strategy for the Circular economy.

Statistics nevertheless show that perhaps the lack of a legal framework for circular economy is perhaps the main factor that this model of economy has not yet alive enough in Latvia and is well below the European Union average.

Of the surveyed companies, most of them, or 10 out of 31, said that enabling a legal framework would be the main factor that would help further the development of the circular economy, and 9 out of 31 surveyed companies believe that greater co-operation with other industries will develop the circular economy. And here it should be noted that the number of surveyed companies is small, but statistical data should be indicative of the further development of the Circular economy.

This is another indication of the future civic activists, politicians, businessmen and professors from Latvia when they debate in the future about the need for a new model of economy, to take into account this data from the research, that the creation of a higher education staff in the area of Circular economy, can be the first mechanism to promote the Circular economy.

Perhaps they do not know the essence of the Circular economy, but more than half or 53.3% (16 out of 31) believe that the circular economy will provide profit to their organization. Only one company believes
that the Circular economy can increase profits, but only in the short term, and every fifth surveyed company believes that by reviving the circular economy, it will not make a profit in its company.

From the whole, it can be concluded that there is general knowledge of the Circular economy and has a positive approach to it by the private sector. This leads to the conclusion that in Latvia there is a need for raising awareness and education about the circular economy, as well as the implementation of the benefits of this model of economy.

The mutual cooperation between the business community, educational institutions, research organizations and the government sector needs to be deepened, and marketing initiatives and campaigns should also increase, since they are important for raising awareness of the benefits of the Circular economy.

Latvia is a good example of a country with a progressive Policy related to the Circular economy and has seen continuous development.

**REPUBLIC OF SLOVENIA**

**1. Introduction**

The research was done in a period of two months - from the beginning of February to the end of March 2018. The survey was conducted among the managers and employees of the companies in the Republic of Slovenia.

The research consists in order to implement the methodology of a standardized questionnaire, that is, a closed-type questionnaire with offered modalities on which they can give a single answer. The 55 enterprises were surveyed, 10 belong to the category - large enterprises, 54 belong to the category - medium-sized enterprises and 21 are small-type enterprises.

The questions cover two areas:
1. The first area covers 3 questions relating to the general knowledge of the enterprise - the activity it deals with, the category to which it belongs and the number of employees in the firm, and 4 questions that are made to the waste produced by the firms that are surveyed - what is the quantity and type of waste they produce, where they store, their knowledge or ignorance about what could be produced from their waste and whether they have or not professional staff for waste management,

2. The second area covers 13 for example questions related to the circular economy, from which one can find out which are the general knowledge of the circular economy, do they understand either the lack of the function and the function of the Circular economy, whether they know or not the legal framework of the Circular economy, whether the Circular economy has an important role in the market societies and whether the Circular economy should have a high state priority or not.

The survey was done by interviewing two people (questioned and interviewed) by asking questions of a selected sample according to a pre-prepared questionnaire. The questions are of closed type, with offered answers and with the right to complete one answer.

2. Research objectives

Republic of Slovenia, abounds with a diverse and rich natural environment. Well-preserved nature provides more socio-economic benefits. On the other hand, economic expansion directly or indirectly affects the increase in the production of waste.

The purpose of the research is to process the collected data, with a tabular presentation of the analyzes obtained, to demonstrate the general knowledge and practices of the business sector in the Republic of Slovenia for the Circular economy. Companies from all three categories (large, medium and small) are selected in order to compare their answers and analyze whether their views and opinions about the Circular economy are different or not.

Through this research, conclusions will be drawn through which aims to raise awareness among the private sector about the importance of the circular economy and open opportunities for the flow of
knowledge and cooperation between the business community, educational institutions, research organizations and the government sector.

The purpose of the research is to encourage the state sector, through the obtained data and analyzes, to engage and support (financial assistance, human resources, etc.) circular economy as a new economic model.

Also, the purpose of the research is to encourage the transition from linear to circular economy (product-waste product), to reduce waste generation and to encourage its use by recycling and creating a new product or energy.

3. Metodological approach

In the Republic of Slovenia, a number of measures are being taken to improve waste management and its recycling, to improve resource efficiency and eco-innovation.

However, the general assumption is that the Republic of Slovenia is still lagging behind in the transition from the linear to the Circular economy, as well as in the development of the Circular economy and the waste market.

Insufficient human and financial resources, the low flow of knowledge and cooperation between the business community, educational institutions, research organizations and the government sector, leads to a low awareness of this model of economy.

If research on the Circular economy is expanded and projects are being developed and papers are prepared, the level of awareness will be raised both in the business sector and consumers and state authorities about the importance of the new model of the economy. Marketing initiatives and campaigns are also important for raising awareness of the benefits of the Circular economy.

4. Results and discussions

The processing and analysis of the collected data is performed according to the predetermined order:

1. the questionnaires will be sorted and selected by the category of enterprises;
2. the results obtained from the survey will be analyzed and the display tables will be prepared;
3. statistical conclusions will be drawn;
4. a final survey report will be compiled.

The survey was conducted on 30 enterprises. 12 companies belong to the group of large, 16 in the group of small and only 2 are in the category of medium-sized enterprises. The same questions were posed to all surveyed enterprises.

All responses will be analyzed individually and separately in each group separately.

When asked if you know what a circular economy is, three answers were offered: "YES", "NO" and "VERY LITTLE".

The analysis showed that (see Table 1), more than half (54.5%) of surveyed companies, or 30 out of 55 companies, answered that they know what is the essence of the Circular economy.

It can be stated that the percentage of firms that know what a Circular economy is, given the fact that this is a new concept of an economy that is expected to be established and built in the Republic of Slovenia, is satisfactory.

However, one should not neglect the fact that 18 out of 55 surveyed companies, or almost every third of the companies (55/18 = 3) know very little about the term circular economy. It can be rightly concluded that although only 7 of the surveyed companies reported that they do not know what a Circular economy is, and others have affirmatively affirmed, the general knowledge of the Circular economy between the private sector in the Republic of Slovenia is still at an unfavorable level.

Table 1: Do you know what a circular economy is?

<table>
<thead>
<tr>
<th>Do you know what a circular economy is?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>6 (60%)</td>
<td>14 (58,3%)</td>
<td>10 (47,6%)</td>
</tr>
<tr>
<td>VERY LITTLE</td>
<td>3 (30%)</td>
<td>8 (33,3%)</td>
<td>7 (33,3%)</td>
</tr>
</tbody>
</table>
In order to get a clearer picture of the general knowledge of the Circular economy, the surveyed enterprises were asked the following question as to where, from where the enterprises draw on the knowledge of the circular economy. The surveyed companies were offered 4 responses with the right to one response (see Table 2).

The analysis of the answers received showed that the companies surveyed received the most information about the Circular economy from everyday communications and activities.

The 25 out of 55 surveyed companies (45.4%) answered that information about the circular economy is received from the daily activities they realize, and every fifth company (55/11 = 5) responded that information on the Circular economy is received from the Business community.

The private sector receives least information on the circular economy from the NGO sector and government institutions. This is yet another indicator, in order to activate the NGO sector and government institutions in the future in promotion and actualization of the circular economy, as a new model of economy on the world market.

Table 2: Table 2. Where do you find your knowledge of the Circular economy?

<table>
<thead>
<tr>
<th>Table 2. Where do you find your knowledge of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO TOTAL</td>
<td>1 (10%)</td>
<td>2 (8.3%)</td>
<td>4 (19%)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>
The concept of a Circular economy and whether the companies in the Republic of Slovenia understand the essence and function of the Circular economy is created from the question where 3 responses were offered "YES", "NO" and "INSUFICIENT". Each of the companies is open to accept one answer.

Table 3: Do you understand the essence and function of the Circular economy?

<table>
<thead>
<tr>
<th>Do you understand the essence and function of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>6 (60%)</td>
<td>7 (29,17%)</td>
<td>9 (42,8%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (10%)</td>
<td>1 (4,1%)</td>
<td>6 (28,5%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>3 (30%)</td>
<td>16 (66,6%)</td>
<td>6 (28,5%)</td>
</tr>
<tr>
<td>ВКУПНО:</td>
<td>10</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

From everyday activities | 2 (16,6%) | 2 (100%) | 5 (31,2%) |
From scientific sources | 3 (25%)    | /        | 5 (31,2%) |
From Business community | 6 (50%)    | /        | 6 (37,5%) |
From NGO and Government institutions | 1 (8,3%) | / | / |
The analysis of the summarized answers show that as many as 25 out of 55 surveyed companies (or 45.5%) answered that they do not understand the essence and function of the circular economy, while a little less than 40% of the respondents answered affirmatively to the question.

From the Table 3 it can be concluded that the companies in the Republic of Slovenia are familiar with the Circular economy, especially considering that only 8 of the companies answered that they do not understand the essence and function of the Circular economy, but they do not need to ignore the fact that every second company has declared that it is INSUFICIENT to understand the essence of the Circular economy and how it works.

The Circular economy is an alternative to the traditional linear economy. It implies, the disposal of resources as long as possible, their further recycling and renewal and their reuse as a product or material.

The Action plan of the Circular economy determines specific targets and measures for waste material. Therefore, the following questions were posed exactly to the waste produced by the surveyed enterprises.

The answers provided showed that the surveyed enterprises create a huge amount of waste, which counts in several tonnes (especially for companies that fall into the category of large enterprises).

One the question- Where do you store the waste?- the companies gave the following answers:

**Table 4: Where do you store the waste?**

<table>
<thead>
<tr>
<th>Where do you store the waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>In different places</td>
<td>3 (30%)</td>
<td>3 (12,5%)</td>
<td>4 (19%)</td>
</tr>
<tr>
<td>On the exact area</td>
<td>5 (50%)</td>
<td>17 (70,8%)</td>
<td>9 (42,8%)</td>
</tr>
<tr>
<td>On the waste place</td>
<td>2 (20%)</td>
<td>4 (16,6%)</td>
<td>8 (38,1%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>10</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

The displayed results in the Table 4, show that companies waste most of their waste in precisely certain places, and at least throw them at landfills.
This is an indicator that companies in the Republic of Slovenia have somehow solved the issue of waste storage, which is one of the conditions for the implementation of the Circular economy. Waste management, its transportation, recycling of waste, the production of new material and re-consumption fall into the complex process of the Circular economy.

This follows the following question, which is also important for the research. 22 out of 30 surveyed companies (see Table 5) stated they knew what could be produced from their waste, and only 8 responded that they did not know what to do with their waste.

Table 5: Do you know what can be produced from your waste?

<table>
<thead>
<tr>
<th>Do you know what can be produced from your waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>4 (40%)</td>
<td>12 (50%)</td>
<td>9 (42.8%)</td>
</tr>
<tr>
<td>NO</td>
<td>6 (60%)</td>
<td>12 (50%)</td>
<td>12 (57.1%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>10</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

It is noteworthy that the data from the analysis of the questionnaires show that more than half of the surveyed companies (or 54.5%) do not know what can be produced from their waste.

On the other hand, 45.4% of surveyed companies said they know how their waste they produce will be recycled. Small number of surveyed companies, however, this should be an indication that the private sector in the Republic of Slovenia is not sufficiently familiar with the future of their waste, ie whether it can be recycled and what can be gained from its recycling.

On this basis, the data obtained from the analyzes is that even 61.8% (or 34 out of 55 companies) do not have expert staff for waste management, and 21 of them or almost every third company has expert personnel transporting waste to certain places. In the future, when implementing the Circular economy in the Republic of Slovenia, this point should be taken into account, especially since this type of economy creates economic value by using more labor and less waste.
In the context of the aforementioned, we will mention the analysis of the question put to the companies, which is whether they have key performance indicators related to the circular economy. They answered the question with "YES" or "NO", whether they have or do not have key indicators for the success of the circular economy in their firms.

Even 38 companies (or 69%) answered that they did not have indicators of the success of the circular economy in their firms, and every third surveyed company responded positively to the issue. It can be rightfully concluded that the private sector in the Republic of Slovenia is not yet capable of establishing the Circular economy, perhaps because the flow of knowledge and cooperation is still small.

The next question posed to the surveyed companies concerned the main motives they have in the market approach to the Circular economy. As an option they were offered several answers and each company was entitled to one answer.

As many as 40 out of 55 surveyed companies (or 72.7%) responded that the main motive in the market approach to the circular economy is reduction of waste and the creation of landfills (especially in urban areas).

The high percentage indicates that the companies are aware that, in order to profess the circular economy in the Republic of Slovenia, it is necessary first of all to provide premises where the waste they produce would store, so that it can be further processed and recycled.

Only four companies argued that the main motive in the market approach to the circular economy is higher income. The percentage of companies that gave this answer is small, but their conclusion is right, because the Circular economy can lead to a new and better growth of the private sector economy, and thus to a higher income.

The analysis showed that the companies do not have key indicators of success with the circular economy, and in order to see the problems, the following question was asked in detail, through which it was necessary to determine what the real threats appear in the circular economy.

Again, they were offered several response options. More than half of the surveyed enterprises (58.1%) stated that limited resources and supply of resources are the main threat for the Circular economy to fail, while every third company or 30.9% of companies consider the variation in prices can pose a real threat
to the Circular economy. Only 6 companies have answered that competition and its maintenance may be the main reason for not being able to build a new concept of economy.

Statistical indicators of the survey showed that slightly more than half of surveyed firms in the Republic of Slovenia are of the view that Circular economy can only be revived if there are sufficient resources that would contribute to circulating the economy of the product-waste product (see Table 6).

Table 6: What are the real threats that appear in the Circular economy?

<table>
<thead>
<tr>
<th>What are the real threats that appear in the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited resources and supply of resources</td>
<td>5 (50%)</td>
<td>12 (50%)</td>
<td>15 (71,4%)</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>2 (20%)</td>
<td>3 (12,5%)</td>
<td>1 (4,7%)</td>
</tr>
<tr>
<td>Fluctuation in the cost of resources</td>
<td>3 (30%)</td>
<td>9 (37,5%)</td>
<td>5 (23,8%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>10</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

Circular economy promises great opportunities for the private sector (from increasing productivity and increasing profits to saving the environment by reducing waste). The surveyed companies were offered several options that could arise as factors that would hinder the enterprise itself to realize the circular economy.

Most of the surveyed companies (27.2%) believe that the lack of a legal framework for Circular economy can be the main factor in not applying the circular economy to their companies. However, almost every fifth company (55/12 = 4.58) does not know at all which factor would be crucial in order not to apply the Circular economy in their company.

Small percentage of companies that gave the answer that the lack of a legal framework can be the main factor in order not to apply the Circular economy, but the fact that the offered answers mostly voted for
that option should be an indicator of future research and data which would serve in building the strategy for the circular economy.

Contrary to the previous question, where the factors that would hinder the enterprise itself to realize the circular economy were analyzed, the next question analyzed the question of which factors would help for the further development of the Circular economy.

Of the surveyed companies, most of them, or 21 out of 55 surveyed companies (38.1%), said that the research, development and introduction of new know-how would help for further development of the Circular economy, while 17 out of 55 surveyed companies believe that greater co-operation with other industries will develop a circular economy. The remaining answers are given for the other options offered.

One of the most important questions asked by companies was how much they believe in the possibility, through the circular economy, to increase their profits within the organization. 5 responses were offered, with the right to one answer.

Table 7: Do you think that the Circular economy will allow increasing profits in your organization?

<table>
<thead>
<tr>
<th>Do you think that the Circular economy will allow increasing profits in your organization?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES in the long run</td>
<td>7 (70%)</td>
<td>11 (45,8%)</td>
<td>9 (42,8%)</td>
</tr>
<tr>
<td>YES in the medium run</td>
<td>2 (20%)</td>
<td>4 (16,6%)</td>
<td>3 (14,2%)</td>
</tr>
<tr>
<td>YES in the short run</td>
<td>/</td>
<td>1 (4,1%)</td>
<td>/</td>
</tr>
<tr>
<td>NO</td>
<td>1 (10%)</td>
<td>3 (12,5%)</td>
<td>4 (19%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>/</td>
<td>5 (20,8%)</td>
<td>5 (23,8%)</td>
</tr>
</tbody>
</table>

From the table above (see Table 7), it is clearly stated what the attitude of the surveyed companies towards the Circular economy is.
Perhaps they do not know the essence of the circular economy, however 49% (27 out of 55) think that the circular economy will provide profit to their organization. Only one company thinks it might make a profit, but in the short term, and 14.5% think that the application of the circular economy will not bring them profit.

The Table 8 gives the data on the Legal framework of the Circular economy in the private sector. Three responses were offered, with the right to one answer.

Table 8: Do you know the Legal framework of the Circular economy?

<table>
<thead>
<tr>
<th>Do you know the Legal framework of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>2 (20%)</td>
<td>10 (41,6%)</td>
<td>4 (19%)</td>
</tr>
<tr>
<td>NO</td>
<td>3 (30%)</td>
<td>3 (12,5%)</td>
<td>9 (42,8%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>5 (50%)</td>
<td>11 (45,8%)</td>
<td>8 (38,1%)</td>
</tr>
</tbody>
</table>

The analysis showed that the legal framework of the Circular economy in the private sector in the Republic of Slovenia is insufficiently known or not known at all. Almost every second surveyed company (55/24 = 2,2) reported that it is not familiar with the legal framework of the circular economy, 27,2% said that they do not know the Legal framework of the Circular economy, and only 16 firms (29 %%) firms have responded positively.

The transition from linear to Circular economy, in the future requires the private sector to have more knowledge about the Circular economy, as a new concept that will positively affect the economy and the environment.

For these reasons, in order to increase the flow of knowledge in the future, the relationship between educational institutions, research organizations, the business structure and the government sector should be intensive.
The next question that was analyzed gave an answer as to whether and how much circular economy has an important role in market societies. The 4 respondents were offered to the surveyed enterprises.

**Table 9: Do you think Circular economy has an important role in market societies?**

<table>
<thead>
<tr>
<th>Do you think Circular economy has an important role in market societies?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>6 (60%)</td>
<td>12 (50%)</td>
<td>14 (66,6%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>3 (30%)</td>
<td>5 (12,5%)</td>
<td>3 (14,2%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>1 (10%)</td>
<td>7 (29,1%)</td>
<td>4 (19%)</td>
</tr>
</tbody>
</table>

What is clearly stated in the Table 9, is that more than half or 58.1% (32 out of 55 surveyed companies) believe that Circular economy plays an important role in market societies, while no company has a negative attitude on this issue.

This is a good indicator that companies have a positive attitude towards the Circular economy, but one should not neglect the fact that almost every fifth company does not know the important role in market societies from Circular economy.

Also, every fifth company considers the role of the Circular economy in market societies are insufficient. A small number of companies are surveyed, but this can be a good indicator in further research.

This question was followed by the next question, whether and how many of the surveyed companies think that the circular economy should have a high state priority.

The numbers of 5 types of response were offered here and the companies had the right to choose one, only.

**Table 10: Do you think that the Circular economy should have a high state priority?**
Do you think that the Circular economy should have a high state priority?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>An extremely important priority</td>
<td>/</td>
<td>/</td>
<td>1 (4.7%)</td>
</tr>
<tr>
<td>YES</td>
<td>8 (80%)</td>
<td>17 (70.8%)</td>
<td>15 (71.4%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>VERY LITTLE</td>
<td>1 (10%)</td>
<td>3 (12.5%)</td>
<td>1 (4.7%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>1 (10%)</td>
<td>4 (16.6%)</td>
<td>4</td>
</tr>
</tbody>
</table>

The analysis showed that, except that the business sector believes that the circular economy has an important role in market societies, it considers that there should be a high state priority. 72.7% of the surveyed companies said that the Circular economy should have a state priority, and none of them does not think contrary to it.

The analyzes show that the business community in the Republic of Slovenia has a positive approach to the process of the Circular economy and as a new concept of economy, it should be a highly priority for the state, because it plays an important role in market societies.

The last question, which was asked and analyzed, relates to the mechanisms through which the circular economy would be promoted. Several response options were offered and each surveyed company was required to indicate mechanisms that could promote the Circular economy.

Most respondents or (25 out of 55 respondents) answered that the creation of the national strategy would be the first mechanism that could promote the Circular economy, while 34.5% of the surveyed companies stated that the creation of qualified experts would be the second mechanism for the occurrence of the Circular economy.

Such statistical indicators should be taken into account when implementing the new model of economy, although the number of companies that are surveyed is small.
Summary and conclusions

The survey found that the private sector has general knowledge about the Circular economy. The number of surveyed companies is small (only 55 companies are included in the survey), but data showed that more than half (54.5%) of surveyed companies, or 30 out of 55 companies, answered that they know what is the essence of the Circular economy.

On the other hand, as many as 25 out of 55 surveyed companies (or 45.5%) responded that they do not understand the essence and function of the Circular economy, while a little less than 40% of the respondents answered affirmatively, that they know how the Circular economy works and what is its essence of existence.

Regarding the waste material they create, more than half of the surveyed companies (or 54.5%) do not know what can be produced from their waste.

On the other hand, 45.4% of surveyed companies said they know how their waste they produce will be recycled. Small number of surveyed companies, however, this should be an indication that the private sector in the Republic of Slovenia is not sufficiently familiar with the future of their waste, ie whether it can be recycled and what can be gained from its recycling.

As many as 40 out of 55 surveyed companies (or 72.7%) responded that the main motive in the market approach to the Circular economy is reduction of waste and the creation of landfills (especially in urban areas).

The high percentage indicates that the companies are aware that, in order to profess the circular economy in the Republic of Slovenia, it is necessary first of all to provide premises where the waste they produce would store, so that it can be further processed and recycled. Only four companies argued that the main motive in the market approach to the circular economy is higher income.

More than half of the surveyed enterprises (58.1%) stated that limited resources and supply of resources are the main threat for the Circular economy to fail, while every third company or 30.9% of companies consider the variation in prices can pose a real threat to the circular economy. Only 6 companies have answered that competition and its maintenance may be the main reason for not being able to build a new concept of economy.
Most of the surveyed companies (27.2%) believe that the lack of a legal framework for circular economy can be the main factor in not applying the circular economy to their companies. However, almost every fifth company (55/12 = 4.58) does not know at all which factor would be crucial in order not to apply the circular economy in their company. And this is a good indicator that the legal framework for the Circular economy is an important factor for this type of economy to revive in the private sector.

The surveyed companies may not know the essence of the circular economy, however 49% (27 out of 55) believe that the circular economy will provide profit to their organization. Only one company thinks it might make a profit, but in the short term, and 14.5% think that the application of the Circular economy will not bring them profit.

The analysis showed that the legal framework of the Circular economy in the private sector in the Republic of Slovenia is unequivocally known or not known at all. Almost every second surveyed company (55/24 = 2.2) reported that it is not familiar with the legal framework of the Circular economy, 27,2% said that they do not know the legal framework of the circular economy, and only 16 firms (29 %%) firms have responded positively.

More than half or 58.1% (32 out of 55 surveyed companies) believe that Circular economy has an important role in market societies, while no firm has a negative attitude on this issue.

This is a good indicator that companies have a positive attitude towards the Circular economy, but one should not neglect the fact that almost every fifth company does not know if the circular economy has an important role in market societies, and also every fifth company considers the role of the circular economy in market societies are insufficient.

The analysis showed that, except that the business sector believes that the circular economy has an important role in market societies, it considers that there should be a high state priority. 72.7% of the surveyed companies said that the circular economy should have a state priority, and none of them does not think contrary to it.

From the whole, it can be concluded that there are general knowledge of the circular economy and has a positive approach to it by the private sector.
This leads to the conclusion that in the Republic of Slovenia there is a need for raising awareness and education about the Circular economy, as well as the implementation of the benefits of this model of economy.

The mutual cooperation between the business community, educational institutions, research organizations and the government sector should be continued.

The Slovenian model for the Circular economy has real possibilities for further development and its implementation.

**REPUBLIC OF CROATIA**

1. Introduction

The research related to the Republic of Croatia, has been realized within the period of two months - from the beginning of January to the beginning of March 2018.

The Survey was conducted among the managers and employees of companies in the Republic of Croatia.

The research is structured to implementing the methodology of a standardised questionnaire, that is, a closed-type questionnaire with offered modalities on which they can provide a single answer.

Within the process of analysis, the numbers of 30 enterprises were surveyed, 12 belong to the category - large enterprises, 2 belong to the category - medium-sized enterprises and 16 are small business type.

The set of questions cover two areas:

1. The first area covers 3 questions concerning to the general knowledge of the enterprise - the activity it deals with, the category to which it belongs and the number of employees in the firm, and 4 questions that are made to the waste produced by the firms that are surveyed - what is the quantity and type of waste they produce,
where they store, their knowledge or ignorance about what could be produced from their waste and whether they have or not professional staff for Waste management,

2. The second researching area, covers 13 questions related to the Circular economy, from which one can find out which are the general knowledge of the Circular economy, do they understand either the lack of the function and the function of the Circular economy, whether they know the functionality of the Legal framework of the Circular economy, whether the Circular economy has an important role in the market societies as well as whether the Circular economy should have a high state priority, an issue of serious consideration.

The Survey was done by interviewing two kind of respondents (questioned and interviewed) by asking questions of advanced selected sample according to a pre-prepared questionnaire. The questions are of closed type, with offered answers and with the option to complete one answer.

2. Goals of the research

Republic of Croatia, has a great potential with rich biodiversity, exceptional natural heritage and abundant water. Economic development depends largely on these resources, especially in the tourism sector. On the other hand, economic expansion directly or indirectly affects the increase in waste production.

The purpose of the research is through the processing of collected data, with a tabular presentation of the analyses obtained, to present the general knowledge and good practices of the business sector in the Republic of Croatia for the Circular economy.

Companies from all three categories (large, medium and small) are selected in order to compare their answers and analyze whether their views and opinions related to the Circular economy are different.

Through this process of researching, all conclusions will be drawn through which aims primary to raise awareness among the Private sector of the importance of the Circular economy and open opportunities and increasing the knowledge as well as cooperation between the stakeholders involved, (business community, educational institutions, research organizations and the government sector).
One of the purposes of the research is to encourage the State sector, through the obtained data and achieved analyzes, to engage and support (financial assistance, human resources, etc.) Circular economy as a new economic model.

Also, the purpose of the research is to encourage the transition from Linear to Circular economy (product-waste product), to reduce the generation of waste and to encourage its use by recycling and creating a new product or energy.

3. Methodological approach

In the Republic of Croatia, a number of measures are being taken to improve waste management and its recycling, to improve resource efficiency and eco-innovation. However, the general assumption is that the Republic of Croatia is below the European Union average in the development of the Circular economy and the waste market. Insufficient human and financial resources, the insufficient knowledge and cooperation between the business community, educational institutions, research organizations and the government sector, leads to a current awareness of the mentioned model of economy.

If research on the Circular economy is expanded and related projects are being developed with quality results, the level of awareness will be raised both in the business sector and consumers and state authorities about the importance of the new model and its advantages. Additionally, the marketing initiatives and campaigns are important for raising awareness of the benefits of the Circular economy.

4. Results and discussions

The processing and analysis of the collected data is performed according to the predetermined order:

1. the questionnaires will be sorted and selected by the category of enterprises;
2. the results obtained from the survey will be analysed and the display tables will be prepared;
3. the statistical conclusions will be drawn;
4. final survey report will be compiled.

In general, the Survey was conducted on 30 enterprises.
The 12 companies belong to the group of large, 16 in the group of small and only 2 are in the category of medium-sized enterprises. The same questions were posed to all surveyed enterprises.

All responses will be analysed individually and separately in each group separately.

By the ordinary question - *Do you know what a Circular economy is?* - three answers were offered: "YES", "NO" and "VERY LITTLE".

The analysis showed that (see Table 1), more than half (56.6%) of surveyed enterprises, or 17 out of 30 companies, answered that they know what a circular economy is.

The percentage of firms that know what is a essence of the Circular economy, results with the perception that this is a new concept of an economy which is expected and has to be established in the Republic of Croatia. The answer is satisfactory.

However, one should not neglect the fact that 11 out of 30 surveyed companies, or almost every third of the firms (30/11 = 2.72) know very little or has limited knowledge about the terminology of Circular economy.

In this context, it can be rightly concluded that although only two of the surveyed companies reported that they do not know what a Circular economy is, and others have affirmatively confirmed, however, at the unfavourable level is the general knowledge of the Circular economy between the private sector in the Republic of Croatia.

**Table 1: Do you know what a Circular economy is?**

<table>
<thead>
<tr>
<th>Do you know what a Circular economy is?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>7 (58,3)</td>
<td>/</td>
<td>10 (62,5%)</td>
</tr>
<tr>
<td>VERY LITTLE</td>
<td>5 (41,6%)</td>
<td>1 (50%)</td>
<td>5 (31,2%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>1 (50%)</td>
<td>1 (6,2%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>
In order to get a precise overview of the general knowledge of the Circular economy, the surveyed enterprises were asked the following question - *Where do you find your knowledge of the Circular economy?* - The surveyed companies were offered 4 responses with the right to one response (see Table 2).

The analysis of the answers received showed that the companies surveyed receive the most knowledge about the Circular economy from the business community. Mutual cooperation and communication between the business community contributes to the exchange of experience and knowledge in the field of Circular economy.

The number of 9 out of 30 surveyed companies responded that information about the circular economy is derived from the everyday activities they realize, and almost every fourth firm (30/8 = 3.75) responded that they read about circular economy in magazines, dailies, papers and other kind of literature. Only one firm replied that information on the Circular economy was received from NGO sectors by government institutions.

This is yet another indicator, in order to activate the NGO sector and government institutions in the future in the process of promotion and actualization of the Circular economy, as a new model of economy already established and functional on the world market.

**Table 2: Where do you find your knowledge of the Circular economy?**

<table>
<thead>
<tr>
<th>Where do you find your knowledge of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>From everyday activities</td>
<td>2 (16,6%)</td>
<td>2 (100%)</td>
<td>5 (31,2%)</td>
</tr>
<tr>
<td>Scientific sources (written)</td>
<td>3 (25%)</td>
<td>/</td>
<td>5 (31,2%)</td>
</tr>
<tr>
<td>Business community</td>
<td>6 (50%)</td>
<td>/</td>
<td>6 (37,5%)</td>
</tr>
</tbody>
</table>
How familiar is the concept of a Circular economy and whether the companies in the Republic of Croatia understand the essence and function of the Circular economy learned from the next question where 3 responses were offered “YES”, “NO” and “UNDERSTAND” and each of the companies had the right on one answer.

Table 3: Do you understand the essence and function of the Circular economy?

<table>
<thead>
<tr>
<th>Do you understand the essence and function of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>4 (33,3%)</td>
<td>1 (50%)</td>
<td>9 (56,2%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (8,3%)</td>
<td>1 (50%)</td>
<td>1 (6,2%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>7 (58,3%)</td>
<td>/</td>
<td>6 (37,5%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

The analysis of the summarized answers showed that only 14 out of 30 surveyed companies responded that they understand the essence and function of the Circular economy.

At first glance from the table (see Table 3), it can be concluded that companies in the Republic of Croatia know the circular economy, especially considering that only 3 of the companies answered that they do not understand the essence and function of the Circular economy, but they do not need to ignore the fact that every second company has declared that it is INSUFFICIENT to understand the essence of the Circular economy and how it works.
The Circular economy is an alternative to the traditional linear economy. It implies, the disposal of resources as long as possible, their further recycling and renewal and their reuse as a product or material.

The main Action plan of the Circular economy determines specific targets and measures for waste material. Therefore, the following questions were posed exactly to the waste produced by the surveyed enterprises.

The answers provided showed that the surveyed enterprises create a huge amount of waste, which counts in several tonnes (especially for companies that fall into the category of large enterprises).

When asked where they are storing the waste material they produce, the companies gave the following answers:

Table 4: Where do you store the waste?

<table>
<thead>
<tr>
<th>Where do you store the waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>In different places</td>
<td>4 (33,3%)</td>
<td>/</td>
<td>4 (25%)</td>
</tr>
<tr>
<td>On the exact area</td>
<td>4 (33,3%)</td>
<td>2 (100%)</td>
<td>10 (62,5%)</td>
</tr>
<tr>
<td>On the waste place</td>
<td>4 (33,3%)</td>
<td>/</td>
<td>2 (16,6%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

The displayed results in Table 4 show that companies mostly store their waste in exactly certain places. This is an indicator that companies in the Republic of Croatia have somewhat solved the issue of waste storage, which is one of the conditions for the implementation of the process of Circular economy.

Waste management, its transportation, recycling of waste, the production of new material and re-consumption fall into the complex process of the Circular economy.
This follows the following question, which is also important for the research. 22 out of 30 surveyed companies (see Table 5), stressed they knew what could be produced from their waste, and only 8 responded that they did not know what to do with their waste.

**Table 5. Do you know what can be produced from your waste?**

<table>
<thead>
<tr>
<th>Do you know what can be produced from your waste?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>8 (66,6)</td>
<td>2 (100%)</td>
<td>12 (75%)</td>
</tr>
<tr>
<td>NO</td>
<td>4 (33,3%)</td>
<td>/</td>
<td>4 (25%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

It is noticeable that the data from the analysis of the questionnaires showed that as many as 73.3% of the surveyed companies know what can be produced from their waste. Small number of surveyed companies, however, this is a good indicator that the private sector can manage its waste because it knows it can sell for further recycling.

On this basis, the obtained data from the analyses is that even 63.3% (or 19 out of 30 companies) do not have professional staff for waste management, while 11 of them or almost every third company have expert personnel transporting waste to certain places. In the future, in the implementation of the Circular economy in the Republic of Croatia, this should be taken into account, especially since this type of economy creates economic value by using more labour and less waste.

In the context of the aforementioned, it is to be stressed that the analysis of the question put to the companies, which is whether they have key performance indicators related to the Circular economy. They answered the question with "YES" or "NO", whether they have or do not have key indicators for the success of the Circular economy in their firms.

In this respect, even 23 companies responded that they did not have indicators of the success of the Circular economy in their firms, and every fourth surveyed company responded positively to the issue. It can be rightfully concluded that the private sector in the Republic of Croatia is not yet capable of
establishing the real Circular economy, perhaps due to the fact that knowledge and cooperation is still insufficient.

The next question posed to the surveyed companies concerned *the main motives they have in the market approach to the Circular economy*. As an option they were offered several answers and each company was entitled to one answer.

As many as 20 out of 30 surveyed companies (or 66.6%) responded that the main motive in the market approach to the circular economy is the reduction of waste and the creation of landfills (especially in the urban areas).

The high percentage shows that the companies are aware that, in order to profess the circular economy in the Republic of Croatia, it is necessary first of all to provide premises where the waste they produce would store, so that it can be further processed and recycled.

Only 2 firms argued that the main motive in the market approach to the circular economy is higher income. The percentage of companies that gave this answer is small, but their conclusion is right, because the circular economy can lead to a new and better growth of the private sector economy, and thus to a higher income.

The analysis showed that the companies do not have key indicators of success with the Circular economy, and in order to see the problems, the following question was asked in detail, through which it was necessary to determine what the real threats appear in the Circular economy.

Again, they were offered several response options. Almost half of the surveyed enterprises (46.6%) stated that limited resources and resource supply are the main threat for the circular economy to function, while every third company or 30% of companies consider that the variation in prices can represent a real threat to the circular economy.

Only 7 companies responded that competition and its maintenance could be the main reason for not being able to build a new concept of economy.

Statistical indicators of the survey showed that almost half of the surveyed companies in the Republic of Croatia are of the opinion that Circular economy can only be revived if there is sufficient resources that would contribute to the circulation of the product-waste product product (*see Table 6*).
Table 6: What are the real threats that appear in the Circular economy?

<table>
<thead>
<tr>
<th>What are the real threats that appear in the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited resources and supply of resources</td>
<td>6 (50%)</td>
<td>1 (50%)</td>
<td>7 (43.7%)</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>3 (25%)</td>
<td>/</td>
<td>4 (25%)</td>
</tr>
<tr>
<td>Fluctuation in the cost of resources</td>
<td>3 (25%)</td>
<td>1 (50%)</td>
<td>5 (31.2%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

Circular economy promises great opportunities for the private sector (from increasing productivity and increasing profits to saving the environment by reducing waste). The surveyed companies were offered several options that could arise as factors that would hinder the enterprise itself to realize the Circular economy.

Most of the surveyed companies (30%) believe that the lack of a legal framework for circular economy can be the main factor in not applying the Circular economy to their companies. However, every third company (30/9 = 3.3) does not know at all which factor would cause the circular economy to be applied in their company.

Small percentage of companies that gave the answer that the lack of a legal framework can be the main factor in order not to apply the circular economy, but the fact that the offered answers mostly voted for that option should be an indicator of future research and data which would serve in building the strategy for the Circular economy.

Contrary to the previous question, where the factors that would hinder the enterprise itself to realize the circular economy were analyzed, the next question analysed the question of which factors would help for the further development of the Circular economy.
Of the surveyed companies, most, or 9 out of 30, said that enabling a Legal framework would be the main factor that would help further the development of the circular economy, and 7 out of 30 surveyed companies believe that greater co-operation with other industries will develop the Circular economy.

One of the most important questions asked by companies was how much they believe in the possibility, through the circular economy, to increase their profits within the organization. The 5 responses were offered.

Table 7: Do you think that the Circular economy will allow increasing profits in your organization?

<table>
<thead>
<tr>
<th>Do you think that the Circular economy will allow increasing profits in your organization?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>7 (58,3%)</td>
<td>1 (50%)</td>
<td>7 (43,7%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (8,3%)</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>1 (8,3%)</td>
<td>/</td>
<td>7 (43,7%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>3 (25%)</td>
<td>1 (50%)</td>
<td>2 (12,5%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>12</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

From the above Table 7, it is visible is what the attitude of the surveyed companies towards the Circular economy. It seems that the essence of the Circular economy is not known in wide perception, however 50% (15 out of 30) think that the Circular economy will provide profit to their organization.

Only one company believes that it will not make a profit if the Circular economy revives, and 26.6% think that the Circular economy is not enough to make a profit in a company.

The Table 8 gives the data on the legal framework of the Circular economy in the private sector. Three responses were offered.
Table 8: Do you know the Legal framework of the Circular economy?

<table>
<thead>
<tr>
<th>Do you know the Legal framework of the Circular economy?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>5 (41,6%)</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>NO</td>
<td>3 (25%)</td>
<td>/</td>
<td>6 (37,5%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>4 (33,3%)</td>
<td>2 (100%)</td>
<td>10 (62,5%)</td>
</tr>
</tbody>
</table>

The analysis showed that the Legal framework of the Circular economy in the private sector in the Republic of Croatia, still remains as a category which is not enough known or not known at all. Almost every second surveyed company reported that it is not familiar with the Legal framework of the Circular economy, and only 5 firms (16.6%) have responded positively.

The transition from Linear to Circular economy, in the future requires the private sector to have more knowledge about the Circular economy, as a new concept that will positively affect the economy and the environment.

For these reasons, in order to increase the knowledge in the future, the relationship between educational institutions, research organizations, the business structure and the government sector should be intensified.

The next question that was analyzed gave an answer as to whether and how much **Circular economy has an important role in market societies**.

Numbers of 4 respondents were offered to the surveyed enterprises.

Table 9: Do you think Circular economy has an important role in market societies?

<table>
<thead>
<tr>
<th>Do you think circular economy has an</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
</table>

What is clearly emphasized in the Table 9 is the fact that more than half (16 out of 30 surveyed companies) consider that Circular economy plays an important role in market societies, while only one company has a negative attitude on this issue. This is a good indicator that companies have a positive attitude towards the Circular economy.

This question was followed by the next question, whether and how many of the surveyed companies think that the circular economy should have a high state priority.

The 5 types of response were offered.

Table 10: Do you think that the Circular economy should have a high state priority?

<table>
<thead>
<tr>
<th>Do you think that the Circular economy should have a high state priority?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>An extremely important priority</td>
<td>/</td>
<td>1 (50%)</td>
<td>/</td>
</tr>
<tr>
<td>YES</td>
<td>11 (91,6%)</td>
<td>/</td>
<td>12 (75%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>VERY LITTLE</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>1(8,3%)</td>
<td>1 (50%)</td>
<td>4 ( 25%)</td>
</tr>
</tbody>
</table>
The analysis showed that, except that the business sector believes that the Circular economy has an important role in market societies, it considers that there should be a high state priority. 76.6% of the surveyed companies said that the circular economy should have a state priority, and none of them does not think that is contrary to that.

The above mentioned analyzes show that the business community in the Republic of Croatia has a positive approach to the Circular economy and as a new concept of economy, it should be a priority for the state, because it plays an important role in market societies.

The last question, which was asked and analyzed, relates to the mechanisms through which the Circular economy would be promoted.

Several response options were offered and each surveyed company was required to indicate mechanisms that could promote the Circular economy.

It is worth pointing out that, most of the respondents or (14 out of 30 firms) responded that the creation of higher education staff in the field of Circular economy would be the first mechanism that could promote the circular economy, while the creation of a national strategy would be the second mechanism for the occurrence of the circle economy.

Such statistical indicators should be taken into account when implementing the new model of economy, although the number of companies that are polled is small.

**Summary and conclusions**

The Survey which has been elaborated found that the private sector is familiar with the general knowledge about the Circular economy.

The number of surveyed companies is small (only 30 companies are included in the survey), however, data show that more than half (56.6%) know what a Circular economy is, and 14 out of 30 companies surveyed (or 46.6%) of them understand the essence and function of this model of economy.

In respect of the Waste material they create, 73.3% (22 out of 30 surveyed companies) answered that they know what could be produced from their waste and a high percentage (or 66.6%) of them think that
the main motive in the market approach to the circular economy is the reduction of waste and the creation of landfills (especially in urban areas).

As many as 20 out of 30 surveyed companies (or 66.6%) responded that the main motive in the market approach to the circular economy is the reduction of waste and the creation of landfills (especially in urban areas).

The high percentage shows that the companies are aware that, in order to profess the Circular economy in the Republic of Croatia, it is necessary first of all to provide premises where the waste they produce would store, so that it can be further processed and recycled. Only 2 firms argued that the main motive in the market approach to the circular economy is higher income.

Most of the surveyed companies (30%) believe that the lack of a legal framework for the circular economy can be a real threat to fail to apply the Circular economy to their companies, and 9 out of 30 said that enabling a legal framework would be the main factor which would help further the development of the Circular economy.

The number of surveyed companies is small, however, statistics show that perhaps the lack of a legal framework for the Circular economy is perhaps the main factor that this model of economy has not yet survived enough in the Republic of Croatia and is well below the European Union average.

More than half (16 out of 30 surveyed companies) believe that Circular economy has an important role in market societies, while only one company has a negative attitude on this issue. A high 76.6% of the surveyed companies said that the circular economy should have a state priority, and again none of them think contrary to it.

This is a good indicator that companies have a positive attitude towards the circular economy.

It has to be stressed that most of the respondents or (14 out of 30 firms) responded that the creation of higher education staff in the field of circular economy would be the first mechanism that could promote the circular economy, while the creation of a national strategy would be the second mechanism for the occurrence of the circle economy. Such statistical indicators should be taken into account when implementing the new model of economy, although the number of companies that are polled is small.
This is another indicator for future civil activists, politicians, businessmen and professors from the Republic of Croatia when they debate in the future about the need for a new model of economy, to take into account this data from the survey, that the creation of a higher education staff in the field of Circular economy, can be the first mechanism to promote the Circular economy.

From the whole, it can be concluded that there are general knowledge of the circular economy and has a positive approach to it by the private sector. This leads to the conclusion that in the Republic of Croatia there is a need for raising awareness and education about the circular economy, as well as the implementation of the benefits of this model of economy.

Cooperation between the business community, educational institutions, research organizations and the government sector needs to be deepened, and marketing initiatives and campaigns should also increase, since they are important for raising awareness of the benefits of the Circular economy.

The Circular economy model in Croatia is set on a quality base and promises to successfully implement and address future challenges.

REPUBLIC OF MACEDONIA

1. Introduction

The Survey was conducted in a period of two months - from the beginning of January to the beginning of March 2018, among the managers and employees of companies in the Republic of Macedonia.

The Survey is consists of the implementation of the methodology of a standardized questionnaire, a closed-type survey with offered modalities for which proper answers are expected to be defined.

The total number of 27 enterprises are subject of Survey, all of them located within the territory of the Republic of Macedonia, of which 8 belong to the category - large enterprises, 12 belong to the category - medium-sized enterprises and 7 are small-type enterprises.
The questions cover the two areas:

1. The first research area, covers 3 questions relating to the general knowledge of the enterprise - the activity it deals with, the category to which it belongs and the number of employees in the firm, and 4 questions especially structured to the waste produced by the firms that are surveyed - what is the quantity and type of waste they produce, where they store, their knowledge or ignorance about what could be produced from their waste and whether or not they have professional staff for dealing with waste,

2. The second research area covers 13 questions in connection with the Circular economy, which can introduce the general knowledge of the Circular economy, weather the terminology and essence is understood either the lack of the function and the function of the Circular economy, the level of knowledge including the legal framework of the Circular economy, whether the Circular economy has an important role in the market societies, whether the Circular economy should have a high state priority or not.

The survey was done by interviewing two sides (questioned and interviewed) by asking questions of a selected sample according to a pre-prepared questionnaire.

The questions are of closed type, with offered answers and with the right to complete one answer.

2. The main goals of the research

The main purpose of the research is to process the collected data by providing a tabular presentation of the analyses obtained, to demonstrate the general knowledge and best practices of the business community in the Republic of Macedonia related to the Circular economy.

The chosen Companies from all three categories (large, medium and small) are selected in order to compare their answers and analyse whether their views and opinions about the Circular economy, the existing difference as well as specifics.

Through this research, conclusions will be drawn, through which objectives will be set for awareness-raising among the private sector related to the importance of the Circular economy and the flow of
knowledge including the cooperation between the Business community, educational institutions, research institutions as well as the government sector.

The research aims to encourage the state sector, through the obtained data and analyses, to engage and support (the financial, human resources, etc.) Circular economy as a new economic model.

Additionally, the purpose of the research is to encourage the transition from Linear to Circular economy (product-waste product), to reduce waste generation and to encourage its use by recycling and creating a new product or energy.

3. Methodological approach

The general assumption is that the Republic of Macedonia is facing a low level related to the Circular economy which correspondence with the development of the current Circular economy and the Waste market.

Insufficient human and financial resources, the low flow of knowledge and cooperation between the business community, educational institutions, research institutions and the government sector, leads to a low awareness of this model of economy.

If research on the Circular economy is expanded and projects are being developed and proper results are produced, the level of awareness will be raised both in the Business community, consumers and state authorities about the importance of the new model of the economy.

This means that Marketing initiatives and campaigns are one of the important segments for raising awareness of the further benefits of the Circular economy.

4. Results and discussions

The processing and analysis of the collected data is performed according to the predetermined order:

- the questionnaires will be sorted and selected by the category of enterprises;
- the results obtained from the survey will be analysed and the display tables will be prepared;
The Survey was conducted on 27 enterprises. The graph clearly shows that during the examination special attention has been taken, all three categories of enterprises were equally represented, in order to make a comparison and analysis of their answers and whether the answers differed with each other.

The 8 of 27 surveyed enterprises belong to the category of large enterprises, 12 are medium-sized enterprises, and the remaining 7 are in the category of small enterprises.

All 27 enterprises have a different business activity.

Chart 1. Enterprise category

The survey was conducted on 27 enterprises.

From the graph (see Chart 1), it is clear that the examination was conducted with focus to all three categories of enterprises to be equally represented.
The aim is to make a clear comparison and analysis of their responses and to ascertain whether the answers differ or do not differ with each other.

The total number of 8 out of 27 surveyed enterprises falls into the category of large enterprises, 12 are medium-sized enterprises and the remaining 7 are in the category of small enterprises. All 27 enterprises are focused on various business activities.

**The questions further relate to the analysis of the Circular economy.**

By the ordinary question—*Do you know what a Circular economy is, the answer is*—a percentage of surveyed enterprises, know the term Circular economy and which category of enterprises knows more or less about it.

There are three answers on the question: "YES", "NO" and "INSUFICIENT".

The analysis showed that (see Chart 2), more than half (55.5%) of the surveyed enterprises, or 15 out of 27 companies, answered that they know what a Circular economy is. It can be said that it is satisfying the percentage of enterprises that know what a Circular economy is, considering the fact that this is a new concept of economy, which is expected to be established and further develop in the Republic of Macedonia.

However, if a comparison is made between the responses given by the category of enterprises, it can be noted that large enterprises have the most knowledge of the term circular economy in relation to small and medium-sized enterprises.

Namely, 87.5% of the big enterprises, answered "I know", compared to 14.2% of the small enterprises that gave a confirmed response and 58.3% of the medium-sized enterprises.

In addition, below, (see Table 1) presents the obtained data from the answers to the question.

**Table 1: Do you know what a Circular economy is?**

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
</table>
Do you know what a Circular economy is?

<table>
<thead>
<tr>
<th></th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know</td>
<td>7 (87,5%)</td>
<td>7 (58,3%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>Very little</td>
<td>1 (12,5%)</td>
<td>3 (25%)</td>
<td>5 (71,4%)</td>
</tr>
<tr>
<td>Do not know</td>
<td>0</td>
<td>2 (16,6%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>8</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

The next question is related to the previous one, and it relates to where the enterprises draw on the knowledge of the Circular economy. The surveyed enterprises were offered 4 responses with the right to one answer.

Most of the knowledge about the term Circular economy is obtained from everyday activities.

The cooperation between the institutions and the business community contributes to the exchange of experience and knowledge in the field of Circular economy.

From the Table below, it can be noted that more than half or every other enterprises receives information about the Circular economy from everyday activities.

The analysis also showed that enterprises receive their knowledge of the Circular economy from the different source, including literature (22.2% of the surveyed enterprises answered that response) and the same companies gave the answer that they received information from the business community.

Only one enterprise responded that the information on the Circular economy is received by the non-governmental sector (see Table 2).

Table 2: Where do you find your knowledge of the Circular economy?
In order to get a clear picture, how familiar is the term circular economy, the surveyed enterprises were asked - *Whether they understood the essence and function of the Circular economy?*

They were offered 3 responses "YES", "NO" and "INSUFICIENT" and each of the enterprises was entitled to one answer.

The analysis of the summarized answers showed that half of the enterprises understand the essence and function of this model of economy (51.8% answered YES), but the comparison of responses given in each of the categories showed that large enterprises understand the essence and function of the circular economy, and as many as 71.4% of small enterprises reported that they are not aware of the Circular economy, and only one in seven answered with YES.

Small number of surveyed enterprises, however, from the summarized result, it can be concluded that only large enterprises understand the essence and function of the Circular economy, as opposed to small enterprises.

The number of 58.3% of enterprises in the category of medium-sized enterprises, which said that they know the essence and function of the Circular economy, is not visible, although the other half of the respondents in this category do not understand or understand the Circular economy inadequately.

From the Chart 1, it is clear that the examination was conducted with focus to all three categories of enterprises to be equally represented.

The aim is to make a clear comparison and analysis of their responses and to ascertain whether the answers differ or do not differ with each other.
The total number of 8 out of 27 surveyed enterprises falls into the category of large enterprises, 12 are medium-sized enterprises and the remaining 7 are in the category of small enterprises. All 27 enterprises are focused on various business activities.

The questions further relate to the analysis of the Circular economy.

By the ordinary question—do you know what a Circular economy is, the answer is - a percentage of surveyed enterprises, know the term Circular economy and which category of enterprises knows more or less about it. There are three answers on the question: "YES", "NO" and "INSUFFICIENT".

The analysis showed that (see Chart 2), more than half (55.5%) of the surveyed enterprises, or 15 out of 27 enterprises, answered that they know what a Circular economy is. It can be said that it is satisfying the percentage of enterprises, that know what a Circular economy is, considering the fact that this is a new concept of economy, which is yet to be established and built in the Republic of Macedonia.

However, if a comparison is made between the responses given by the category of enterprises, it can be noted that large enterprises have the most knowledge of the term Circular economy in relation to small and medium-sized enterprises.

Namely, 87.5% of the big enterprises, answered "I know", compared to 14.2% of the small enterprises that gave a confirmed response and 58.3% of the medium-sized enterprises.

In addition below, (see Table 1) presents the obtained data from the answers to the question.

The next question is related to the previous one, and it relates to - Where do you find your knowledge of the Circular economy?

The surveyed enterprises were offered 4 responses with the right to one answer.

Most of the knowledge about the term circular economy is obtained from everyday activities.

The cooperation between the institutions and the business community contributes to the exchange of experience and knowledge in the area of Circular economy.

From the Table below, it can be seen that more than half or every other enterprises receives information about the Circular economy from everyday activities
The analysis also showed that enterprises receive their knowledge of the Circular economy from the different source, including literature (22.2% of the surveyed enterprises answered that response) and the same companies gave the answer that they received information from the business community.

Only one enterprise responded that the information on the Circular economy is received by the non-governmental sector (see Table 2).

All surveyed enterprises belong to the linear economy. They generate a large amount of waste from their production. On the other hand, the Circular economy deals with waste utilization, rising profits and preserving the environment. Consequently, the following questions were posed exactly to the waste produced by the surveyed enterprises.

The answers provided indicate that the enterprises that have been deployed are creating huge amounts of waste, which counts in several tons (especially among enterprises that fall under the category of large enterprises).

Total number 18 out of 27 enterprises responded that they stored it in a precisely defined place, almost 26% of the respondents said that they stored the waste in several places, and only two enterprises responded that they dumped the waste in a landfill.

Almost identical is the percentage of enterprises that know and those who do not know what can be further produced from the waste they throw out.

The 44.4% of the surveyed enterprises do not know what could be produced from the waste they throw out, and a little more than the surveyed enterprises, or 14 out of 27 (51.8%) are familiar and know exactly what will be produced further from the waste what they produce.

However, the data from the analysis of the questionnaires is remarkable, which show that even half of the big enterprises, which are the largest producer of waste materials, do not know what can be produced from their waste.

The percentage of negative responses is similar in both medium and small enterprises.

The statistical data from the analysis showed that almost 60% of the enterprises have expert staff for dealing with waste, and 11 out of 27 surveyed enterprises do not have such a personnel.
It is especially noteworthy that large firms have expert staffs who handle waste, despite the fact that even in 5 out of 7 small firms do not have persons who will transport the waste to certain places. The situation in the medium-sized enterprises is also unseen. No other enterprises in this category have professional staff for waste (6 out of 12 companies answered NO).

In the context of the above mentioned, it will be emphasized the analysis of the question put to the companies, which is whether they have key performance indicators related to the Circular economy.

Even 21 enterprises surveyed responded with NO, and only 6 answered that they have key indicators of success with the circular economy. From the 6 companies that answered affirmatively, 4 are from big companies.

This is another indication that large enterprises in relation to small and medium-sized enterprises have greater knowledge of the importance of the Circular economy and, from that aspect, take measures and activities to make it easier to fit into the new concept of economy.

However, it is particularly important to highlight the high percentage of firms (even 77.7%), who answered that they have no key indicators of success with the Circular economy.

As a conclusion, is important to be stressed that he private sector in the Republic of Macedonia is not yet ready to establish the Circular economy, perhaps because the flow of knowledge and cooperation is still small. The basic reason is lack of knowledge.

The next question posed to the surveyed enterprises concerned the main motives they have in the market approach to the Circular economy.

As an option, 3 responses were offered and each enterprise was entitled to one answer. 66.6% responded that the main motive in the market approach to the Circular economy is the reduction of waste and the creation of landfills (especially in urban areas).

The high percentage shows that the enterprises are aware that, in order to deal with the Circular economy in the Republic of Macedonia, it is necessary, first of all to provide premises where the waste they produce would store, so that it can be further processed and recycled.
Total number of 6 out of 27 firms responded that their main motive in the market approach to Circular economy is their higher income. The Circular economy can lead to a new and better growth of the private sector economy and thus to a higher income.

The analysis showed that companies have no key indicators of success with the circular economy, and to see the problems was posed the next question, through which it was necessary to determine what are the real threats that appear in the circular economy.

Again, they were offered several response options.

More than 70% of surveyed enterprises said that limited resources and resource supply are the main threat to the failure of the Circular economy to function, while 4 out of 27 enterprises consider that price variation can pose a real threat and the same enterprises are referred to in paragraph that, competition and its maintenance may be the main reason for not being able to build a new concept of economy.

Statistical indicators from the survey showed that the Private sector in the Republic of Macedonia believes that the circular economy can only be revived if there are sufficient resources that would contribute to the circulation of the product-waste product.

The Circular economy promises great opportunities for the Private sector (from increasing productivity and increasing profits to saving the environment by reducing waste).

The surveyed enterprises were offered several options, which could arise as factors that would hinder the enterprise itself to realize the circular economy. 8 companies reported that funding for research, development and resources can be the main factor in not applying the Circular economy to their enterprises.

This is another indication that the private sector, in addition to resources, needs financial support in order to develop the Circular economy in its enterprise.

However, 7 out of 27 enterprises (25.9%) responded that the consumer still plays the leading role in the market, as long as there is a lack of consumer perceptions about the Circular economy (to change their behavior and attitude towards the use of products, recycling and servicing the products themselves in order to extend their life expectancy), until then and it will be a major factor in order not to develop the circular economy.
Contrary to the previous question, where the factors that would hinder the enterprise itself to realize the circular economy, the next question analysed the question of which factors would help for the further development of the circular economy.

The 10 out of 27 surveyed enterprises stated that providing a legal framework would be the main factor that would help further the development of the Circular economy, and only two enterprises believe that the increased consumption and the demand will develop the Circular economy.

One of the main questions asked by enterprises was how much they believe in the possibility, through the Circular economy, to increase their profits within the organization.

Total number of 5 responses was offered, with the possibility to make one answer, only.

Table 3: Do you think that the Circular economy will allow increasing profits in your organization?

<table>
<thead>
<tr>
<th>Do you think that the Circular economy will allow increasing profits in your organization?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES, in the long run</td>
<td>5 (62,5%)</td>
<td>6 (50%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>YES, in the medium term</td>
<td>1 (12,5%)</td>
<td>/</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>YES, in the short term</td>
<td>1 (12,5%)</td>
<td>1 (8,3%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>3 (25%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>Do not know</td>
<td>1(12,5%)</td>
<td>2 (16,6%)</td>
<td>3 (42,8%)</td>
</tr>
</tbody>
</table>

The Table 3 clearly shows the situation in the enterprise in the Republic of Macedonia. From the 12 out of 27 companies reported that the Circular economy would provide long-term profit.

However, large and medium-sized enterprises are more positively oriented towards the Circular economy, compared to small enterprises, which as much as 42.8% have no attitude as to whether the circular economy will bring profit within the company or not. One should not neglect the fact that even 6
companies answered I DO NOT know the question, which can rightly be said that almost every fifth enterprise does not know whether there will be or not profit from the Circular economy.

The Table 4 gives the data on the extent to which the legal framework of the Circular economy in the private sector is known.

Three responses were offered, with the right to one answer.

Table 4: Do you know the legal framework of the Circular economy?

<table>
<thead>
<tr>
<th>DO YOU KNOW THE LEGAL FRAMEWORK OF THE CIRCULAR ECONOMY</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>/</td>
<td>2 (16,6%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>NO</td>
<td>3 (37,5%)</td>
<td>5 (41,6%)</td>
<td>3 (42,8%)</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>5 (62,5%)</td>
<td>5 (41,6%)</td>
<td>3 (42,8%)</td>
</tr>
</tbody>
</table>

The analysis showed that the Legal framework for the Circular economy in the Private sector in the Republic of Macedonia is insufficient or unknown at all.

Almost every second surveyed enterprise is not familiar with the Legal framework of the Circular economy, and only 3 (11.1%) enterprises have responded positively.

The transition from linear to Circular economy, in the future requires the Private sector to have more knowledge about the Circular economy, as a new concept that will positively affect the economy and the environment.

For these reasons, in order to increase the flow of knowledge in the future, there should be an intensified relationship between educational institutions, research organizations and the business community.
The next question that was analysed gave an answer as to whether and how much circular economy has an important role in market societies. Total numbers of 4 respondents were offered to the surveyed enterprises.

Table 5: Do you find that the Circular economy has an important role in marketing societies?

<table>
<thead>
<tr>
<th>DO YOU FIND THAT THE CIRCULAR ECONOMY HAS AN IMPORTANT ROLE IN MARKETING SOCIETIES?</th>
<th>BIG ENTERPRISES</th>
<th>MEDIUM ENTERPRISES</th>
<th>SMALL ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>5 (62,5%)</td>
<td>9 (75%)</td>
<td>3 (42,8%)</td>
</tr>
<tr>
<td>NO</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>NOT ENOUGH</td>
<td>1(12,5%)</td>
<td>1 (8,3%)</td>
<td>1 (14,2%)</td>
</tr>
<tr>
<td>DO NOT KNOW</td>
<td>2 (25%)</td>
<td>2 (16,6%)</td>
<td>3 (42,8%)</td>
</tr>
</tbody>
</table>

What is clearly noted in the overview (see Table 5) is that none of the enterprises responded negatively, that is, none believes that the Circular economy has no important role in market societies.

From the point of view, 62.9% of the enterprises answered affirmatively and it is a good indicator that the enterprises have a positive attitude towards the Circular economy.

This question was followed by the next question, whether and how many of the surveyed companies think that the Circular economy should have a high state priority.

The 5 types of response were offered here and the enterprises are delivered one answer, only.

Table 6: Do you think that the Circular economy should have a high state priority?
The analysis showed that, except that the business community believes that the Circular economy has an important role in market societies, it considers that there should be a high state priority.

Almost 60% of surveyed enterprises answered that the Circular economy should have a state priority, and none of them thinks contrary to it. 66.6% of enterprises belonging to the middle category of enterprises are in the opinion that the Circular economy should be an extremely important priority for the state.

The above analyses show that the business community in the Republic of Macedonia has a positive approach to the circular economy and as a new concept of economy, it should be a priority for the state, because it plays a role in the market societies.

The last question, which was asked and analysed, relates to the mechanisms through which the Circular economy would be promoted. Several response options were offered and each surveyed enterprises was required to indicate mechanisms that could promote the Circular economy.

Total number of 19 out of 27 enterprises responded that creating higher education staff in the field of Circular economy would be the first mechanism that could promote the circular economy, and 22.2% think that the awareness of the Circular economy will be awakened only if it is created National strategy.
Seven of the eight large enterprises think that higher education staff is the first mechanism to promote the new concept of the economy, 66.6% of medium-sized enterprises share the same opinion, and the same six out of seven small enterprises are of the opinion that the creation of higher education staff will lead to promotion of the Circular economy.

**Summary and conclusions**

The survey found that the Private sector has general knowledge about the Circular economy. The small number of surveyed enterprises (only 27 enterprises covered in the survey), however, data show that more than half (55.5%) know what a Circular economy is, and 51.8% of them understand the essence and function of this model the economy.

Regarding the waste material they create, 44.4% of the surveyed enterprises stressed that they do not know what could be produced from their waste (although they are large waste producers) and even 66.6% answered that the main motive in the market access to the Circular economy is the reduction of waste and the creation of landfills.

More than 70% of surveyed enterprises reported that Circular economy can only be revived if there are sufficient resources that would contribute to the circulation of the product-waste product, while 10 out of 27 surveyed enterprises stressed that enabling a legal framework would was the main factor that would help further the development of the Circular economy.

Nevertheless, the Private sector believes that the legal framework of the Circular economy in the Private sector in the Republic of Macedonia is unequivocally known or not known at all.

Almost every second surveyed company is not familiar with the legal framework of the Circular economy, and only 3 (11.1%) firms have responded positively. We can rightly conclude that campaigns, conferences and tribunes in the future should focus on the promotion of the legal framework of the circular economy.

The percentage (62.9%) of the companies that answered that the Circular economy has an important role in the market societies is satisfactory.

Another indicator that the private sector has a positive attitude and approach to the circular economy.
In the context of the aforementioned, it is important to be emphasised the data from the analysis that almost 60% of the surveyed enterprises reported that the Circular economy should have a state priority, and that none of them thinks contrary to that.

The 70.3% of the enterprises answered that the creation of higher education staff in the field of Circular economy would be the first mechanism that could promote the Circular economy.

This is another indicator for future civil activists, politicians, businessmen and professors from the Republic of Macedonia when they debate the need for a new model of economy, to take into account this data from the research, that the creation of higher education staff in the field of circular economy, would be the first mechanism that could promote the Circular economy.

From the whole, it can be concluded that there are general knowledge of the Circular economy and has a positive approach to it by the Private sector.

This leads to the conclusion that in the Republic of Macedonia there is a need for raising awareness and education about the Circular economy, as well as the implementation of the benefits of this model of economy.

The further process of cooperation between the business community, educational institutions, research organizations and the government sector needs to be deepened, strengthened and additionally to increase marketing initiatives and campaigns.

It is more than important to emphases the fact that in Macedonian environment the further rising awareness of the benefits of the Circular economy is in order to create more developing and prosperity society.

One of the basic postulates of the Circular Economy and its successful implementation is building citizen awareness of the exceptional importance of this new economic model.

The significant increase in the level of awareness and culture is needed in order to successfully implement the Circular economy. The application of the Circular economy greatly improves the quality and style of living.
NOTE:

The Report for Macedonia is based on 27 processed Questionnaires.

The remaining 17 Questionnaires did not have enough processing elements (inadequate answers, repetitions, insufficient grounds).

Therefore, from the total number of 43 offered questionnaires, 27 selected samples of Questionnaires were processed.

FINAL CONCLUSIONS

Finally, it can be concluded that the joint research on the current state of circular economy conducted in the 4 countries (Latvia, Croatia, Slovenia and Macedonia) shows a need for increased awareness in the importance of circular economy, not only among the business sector, entrepreneurs, the institutions, but also general population, the young people with focus on the students.

The research also proves the need for long-term strategic cooperation between higher institutions and businesses to promote the concept of circular economy, but also confirms the need for improving the overall quality of education regarding the circular economy especially in the less developed countries.

Since neither of the countries offers studies in the field of Circular Economy, the best way to meet the needs and challenges presented in the research study is by creating a Master study program for circular economy, which will improve the quality and efficiency in education as well as contribute to the economic, social and environmental progress. The innovative Master program curriculum will support and implement models for effective and practical learning through raising awareness and inspiring students to rethink the economic future from the viewpoint of the circular economy. The Master program will introduce the benefits of transitioning from linear to circular economy, and will make sure to accelerate the transition of knowledge, foster innovation, creativity and entrepreneurial skills of students.