



**ISCTBL 2021**  
INTERNATIONAL SCIENTIFIC CONFERENCE

Универзитет „Гоце Делчев“ –  
Штип

**Goce Delchev University  
Shtip**

Факултет за туризам и бизнис  
логистика

**Faculty of Tourism and  
Business Logistics**

**Четврта Меѓународна Научна Конференција  
Fourth International Scientific Conference**

**ПРЕДИЗВИЦИТЕ ВО ТУРИЗМОТ И БИЗНИС  
ЛОГИСТИКАТА ВО 21 ВЕК  
CHALLENGES OF TOURISM AND BUSINESS  
LOGISTICS IN THE 21ST CENTURY**

**ЗБОРНИК НА ТРУДОВИ  
CONFERENCE PROCEEDINGS**



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**Социо-економски импликации на КОВИД-19: намалување на**  
**разликите и справување со дистрибутивните влијанија во различни**  
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**Прва сесија: Бизнис логистика и бизнис администрација**

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**Panel session**

**Socio-economic implications of COVID-19: reducing disparities and addressing distributional impacts in different sectors**

Session chair: Tatjana Boshkov, Assoc.professor and Dean at Faculty of tourism and business logistics, „Goce Delcev University – Stip, N. Macedonia

Panelists

1. Gligor Bishev, University professor and Management Board Chairman, Sparkasse Bank, N. Macedonia
2. Zarko Radjenovic, PhD, Research Associate, Innovation Center, University of Nis, Serbia
3. Natasha Miteva, PhD, Vice-Dean for Education, Faculty of Tourism and Business Logistics, Goce Delcev University – Stip, N. Macedonia

**Moderators**

**First session: Business logistics and business administration**

Tatjana Boshkov, PhD, Dean at Faculty of Tourism and Business Logistics, Goce Delcev University – Stip, N. Macedonia

**Second session: Tourism, hospitality and gastronomy**

Natasha Miteva, PhD, Vice-Dean for Education, Faculty of Tourism and Business Logistics, Goce Delcev University – Stip, N. Macedonia





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**ФАКУЛТЕТ ЗА ТУРИЗАМ И БИЗНИС ЛОГИСТИКА**  
**FACULTY OF TOURISM AND BUSINESS LOGISTICS**

**ЧЕТВРТА МЕЃУНАРОДНА**  
**НАУЧНА КОНФЕРЕНЦИЈА**

**FOURTH INTERNATIONAL**  
**SCIENTIFIC CONFERENCE**

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## **CIRCULAR ECONOMY DEVELOPMENT AND RESOURCE EFFICIENCY: EVIDENCE FOR MACEDONIA**

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### **Abstract**

In the time of competitiveness, circular economy is a way to change economic growth pattern and achieve the balance among economy, resources and environments. World trends show that circular economy is an excellent way to create jobs and thus increase economic growth and use the low skills especially in rural areas. This paper argues that employment in circular economic activities creates opportunities for economic growth and a visible increase in the level of employment. 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. Through expanding circular economy activity there's a reasonable potential to reduce regional and occupational mismatch meaning development in rural sector in one hand, and a strong chance that net jobs can be created with sustained reductions in unemployment, on other hand.

Taking into account what economic activities encompass the circular economy, it simply represents a necessity for every society and its well-being.

**Key words:** circular economy, employment, development, resource efficiency, Macedonia.

JEL Classification: *O00, O10, J69, O44.*

### **Introduction**

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 eco-design, 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”* (Beasley et al.,2014).

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 (DEFRA, 2011):

- 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).

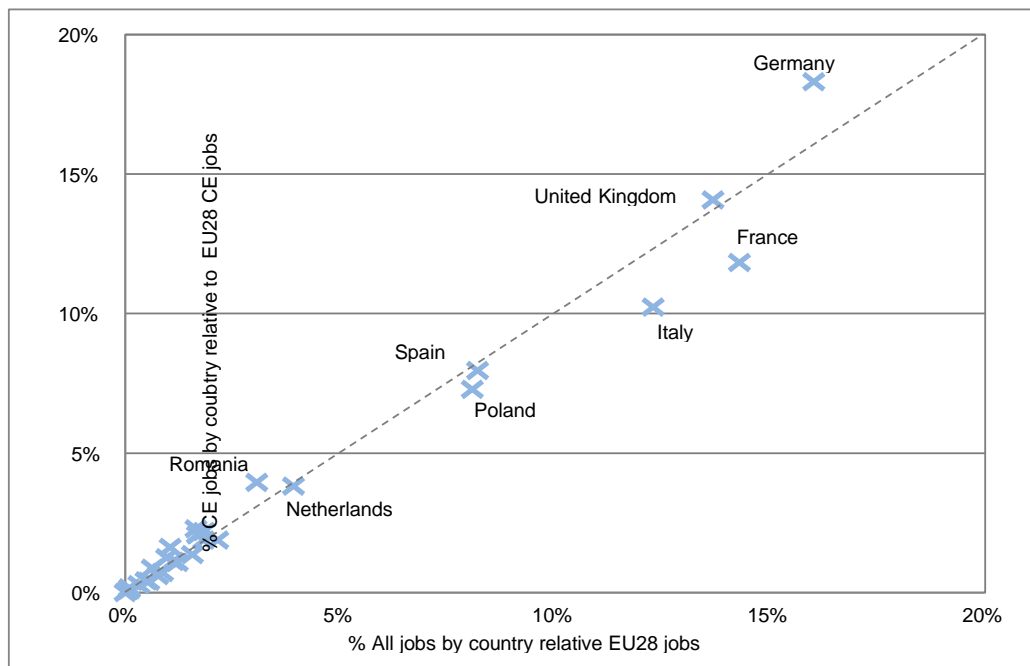
So, circular economy and possible practical implementation, but to drive broader changes it is critical to collect and share data, spread best practice, invest in innovation and encourage consumers with adequate green product information. The purpose of each country is to investigate basic principles 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 (EMF, 2015). The results of the research show that circular economy implementation milestones are: legal framework, administrative conditions, economic instruments and public education and awareness.

### Perspectives for circular economy activities in Europe

In recent years, we are increasingly witnessing the meaning of the term circular economy. World trends show that circular economy is an excellent way to create jobs and thus increase economic growth. This implies 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 (EMF, 2015).

Analyzes show that employment in circular economic activities creates opportunities for economic growth and a visible increase in the level of employment (DEFRA,2015). Of course, this also depends on the policy and strategy of any government. Taking into account what economic activities encompass the circular economy, it simply represents a necessity for every society and its well-being (Figure 1).

Figure 1. Distribution of jobs in circular economy activities and total jobs by country



Source: Eurostat

Also, Eurostat made a calculation that 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 (Eurostat, 2018).

### **Prospects for benefits from circular economy in rural area**

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 (Boshkov et al., 2016).

Facts for using the opportunity of the potential for an expansion in circular economy and rural development are (Jackson, 2009):

- 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.

### **Circular economy development in Macedonia**

How should this circular economy develop to the stage where whatever is done works effectively and well in case of the Republic of North 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 our country. There is a need to explore this in aspect of the efficiency resource and waste management (Drakulevski & Boshkov, 2019).

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 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 especially for rural regions in Macedonia. The results will help in creating goals, strategy and measures for their implementation.

### 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. 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 do about implementation of circular economy? In the basis of these questions is to understand what are the needs, the effects, the obstacles and the benefits from circular economy? We used the SPSS econometrics software to process the collected data.

### Results of the survey

Table 1. *Descriptive Statistics*

	Mean	Std. Deviation	N
Believes	1,53	,644	135
Country	2,34	1,107	135
Industry	4,67	2,518	135
Mechanisms	1,89	,835	135

Source: *own estimation*

Table 2. *Correlations*

		Believes	Country	Industry	Mechanisms
Pearson Correlation	Believes	1,000	-,598	,106	,179
	Country	-,598	1,000	-,021	-,088
	Industry	,106	-,021	1,000	,235
	Mechanisms	,179	-,088	,235	1,000
Sig. (1-tailed)	Believes	.	,000	,110	,019
	Country	,000	.	,403	,155
	Industry	,110	,403	.	,003
	Mechanisms	,019	,155	,003	.
N	Believes	135	135	135	135
	Country	135	135	135	135
	Industry	135	135	135	135
	Mechanisms	135	135	135	135

Table 3. *Variables Entered/Removed*

Model	Variables Entered
1	Mechanisms, Country, Industry <sup>a</sup>

a. All requested variables entered.



Table.4 Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.615 <sup>a</sup>	.378	.364	.514	.378	26,540	3	131	.000	.099

a. Predictors: (Constant), Mechanisms, Country, Industry

b. Dependent Variable: Believes

Table 5. ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21,041	3	7,014	26,540	.000 <sup>a</sup>
	Residual	34,619	131	.264		
	Total	55,659	134			

a. Predictors: (Constant), Mechanisms, Country, Industry

b. Dependent Variable: Believes

Table 6. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2,082	.162		12,822	.000	1,761	2,403
	Country	-.342	.040	-.587	-8,483	.000	-.421	-.262
	Industry	.017	.018	.068	.955	.341	-.019	.053
	Mechanisms	.086	.055	.111	1,565	.120	-.023	.195

a. Dependent Variable: Believes

Table 7. Coefficient Correlations<sup>a</sup>

Model		Mechanisms	Country	Industry
1	Correlations			
	Mechanisms	1,000	.085	-.234
	Country	.085	1,000	.001
	Industry	-.234	.001	1,000
Covariances				
	Mechanisms	.003	.000	.000
	Country	.000	.002	.000
	Industry	.000	.000	.000

a. Dependent Variable: Believes

Table 8. Residuals Statistics<sup>a</sup>

	Minimum	Maximum	Mean	Std. Deviation	N

Predicted Value	,82	2,15	1,53	,396	135
Std. Predicted Value	-1,784	1,586	,000	1,000	135
Standard Error of Predicted Value	,047	,122	,086	,019	135
Adjusted Predicted Value	,81	2,11	1,52	,395	135
Residual Std. Residual	-,795	1,156	,000	,508	135
Stud. Deleted Residual	-1,547	2,249	,000	,989	135
Stud. Deleted Residual	-1,570	2,296	,002	1,003	135
Deleted Residual	-,819	1,205	,002	,523	135
Stud. Deleted Residual	-1,579	2,335	,003	1,008	135
Mahal. Distance	,116	6,497	2,978	1,603	135
Cook's Distance	,000	,056	,007	,011	135
Centered Leverage Value	,001	,048	,022	,012	135

a. Dependent Variable: Believes

Figure 1. *Regression analysis of the observed analysis*

### 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 takes the countries, industries and mechanism as independent variables and believes as dependent variables because the survey explores 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 (.615 and .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.

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.

### **Conclusion and Recommendations**

According to the results the development of circular economy, enhancing the efficiency of resources as improvement of waste market in 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.

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