THE CIRCULARITY CHALLENGE: SUSTAINABILITY AND RESPONSIBILITY

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Some facts…

The circular economy is an innovative concept, which implies efficient use and reuse of resources and a strong business case. It is a strategy for sustainable development, which is proposed to deal with the problems of environmental degradation and to weaken the dependence of the economy on natural resources and the environment.

CE = a way to change the model of economic growth and achieve a balance between the economy, resources and environments.

As a creation of new opportunities for growth, the circular economy will enable:

- waste reduction
- initiates greater resource productivity
- deliver a more competitive economy
- Positioning the host country to better addressing of emerging security issues/resource shortages in the future.
- to help reduce the environmental impact of domestic production and consumption (in the host country and abroad)

- At the core of the circular economy is life cycle thinking.
- Life cycle thinking involves recognizing the various impacts that occur at all points along the life cycle of a product or material.
- It also involves recognizing how certain influences—the impact of materials, the manufacturing process, energy sources, distribution channels, disposal options—affect certain choices.

The results of the survey of the countries implementing CE activities show that the steps for implementing the circular economy are:

- legal framework,
- administrative conditions,
- economic instruments and
- education and public awareness

Europe faces significant economic and environmental challenges in the use of labor and limited natural resources.

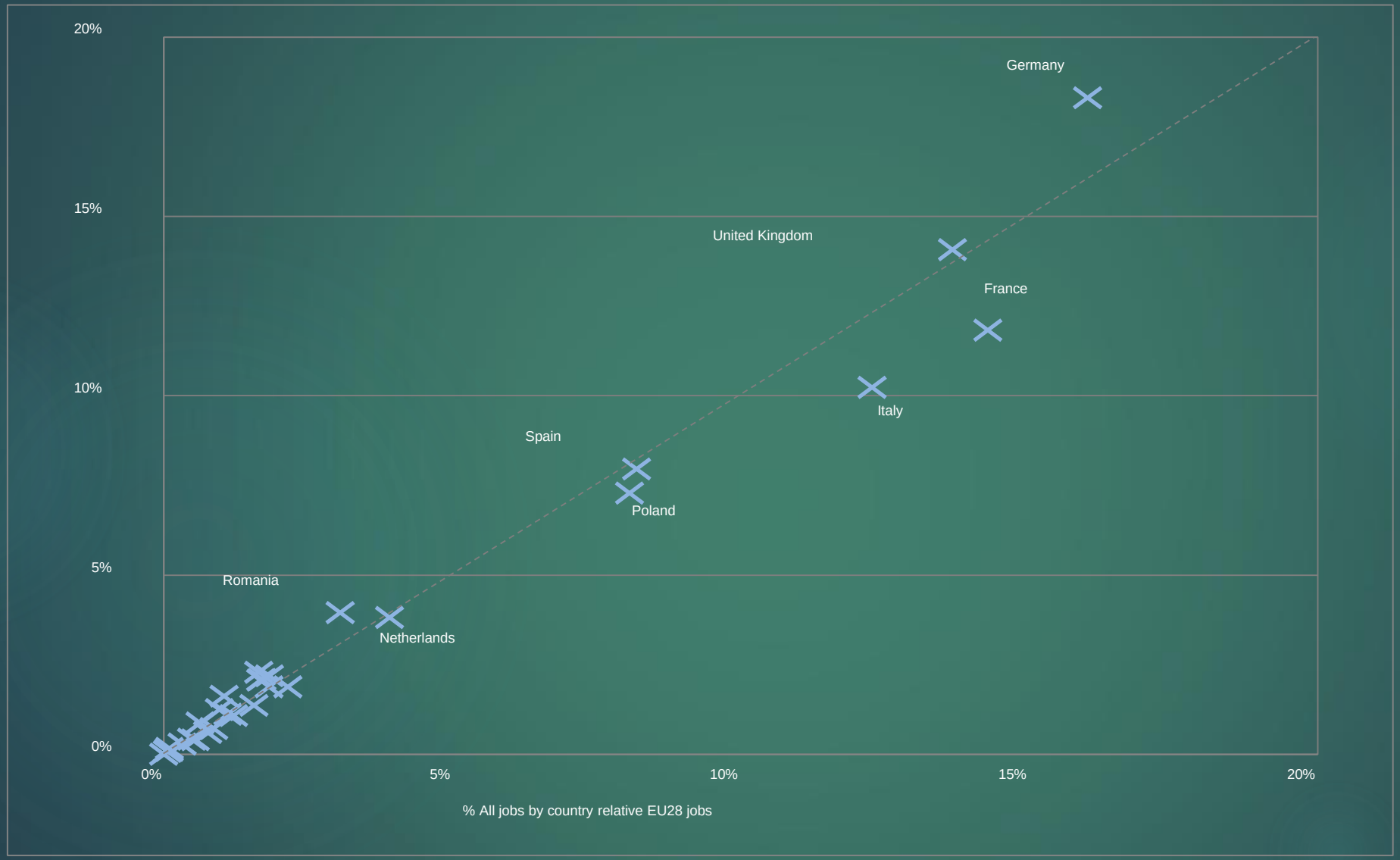
There are signs of an increase in employment and stabilization of unemployment.....But in most countries this is not the case....especially in certain occupations and age groups...

CE (in Germany) offered:

- creation of new jobs,
- lower structural unemployment and
- increased productivity of materials.

What are the facts?

Distribution of work places in CE activities and total jobs by country (2020)



The calculation showed that the activities for collection, treatment and disposal of waste, Bulgaria, Croatia, Czech Republic, Italy and Romania have the highest percentage of employment..

Austria, Estonia, Finland, Slovakia, Sweden, Czech Republic, France, Hungary, Lithuania and Spain have the highest percentage of employment in repair activities (repair of machinery and equipment and repair of computers, personal and other household items)..

In the second-hand retail store, it is proportionally highest in Estonia, Hungary, Latvia, Lithuania and England.

Countries for which rental and leasing activities have the highest percentage per 10,000 inhabitants are Ireland, Luxembourg, Malta, the Netherlands and England

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For the recovery of sorted materials, France, Lithuania, Luxembourg, Romania and Slovenia have relatively larger proportions of their population

The key points that emerge from the mapping of current employment patterns in CE activities are:

1. Employment in these circular economy activities is distributed across Europe and largely in line with the distribution of total employers

2. Circular economy activities within the scope of this analysis would appear to have the potential to create jobs across Europe by reducing regional disparities in unemployment

3. There are currently around 3.4 million people employed in the repair, waste and recycling and rental and leasing sectors across Europe.

4. The tendency of countries to specialize in "circular economy" activities and the patterns in the geographical distribution of CE activities illustrate a reasonable potential for all countries in Europe to benefit from the expansion of the circular economy.

Circular economy: the case of Macedonia

How should this circular economy develop to a stage where it will function efficiently in the case of Macedonia as well?

What level are we at? Is the country moving towards the development of the circular economy and waste management or not?

This issue requires further examination and research into issues related to the sustainability of the economy. There is a need to investigate this in terms of resource efficiency and waste management.

Research

- Research on the level of existence of CE and waste market.
- The goal was to collect data and examine the behavior of all subjects and their opinion on the current state of the circular economy and the waste market.
- The data analysis was conducted with a focus on what business entities in Macedonia, Latvia, Slovenia and Croatia are doing to implement a circular economy and develop the waste market?
- Underlying these questions is to understand what are the needs, effects, barriers and benefits of CE?As a result of the answer - what strategy and measures should be taken in Macedonia?

Research results

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

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	Variables Removed	Method
1	Mechanisms, Country, Industry[a]	.	Enter

a. All requested variables entered.

Table.4 Model Summary[b]

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[a]	,378	,364	,514	,378	26,540	3	131	,000	,099

a. Predictors: (Constant), Mechanisms, Country, Industry
b. Dependent Variable: Believes

Table 5. ANOVA[b]

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

a. Predictors: (Constant), Mechanisms, Country, Industry
b. Dependent Variable: Believes

Table 6. Coefficients[a]

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[a]

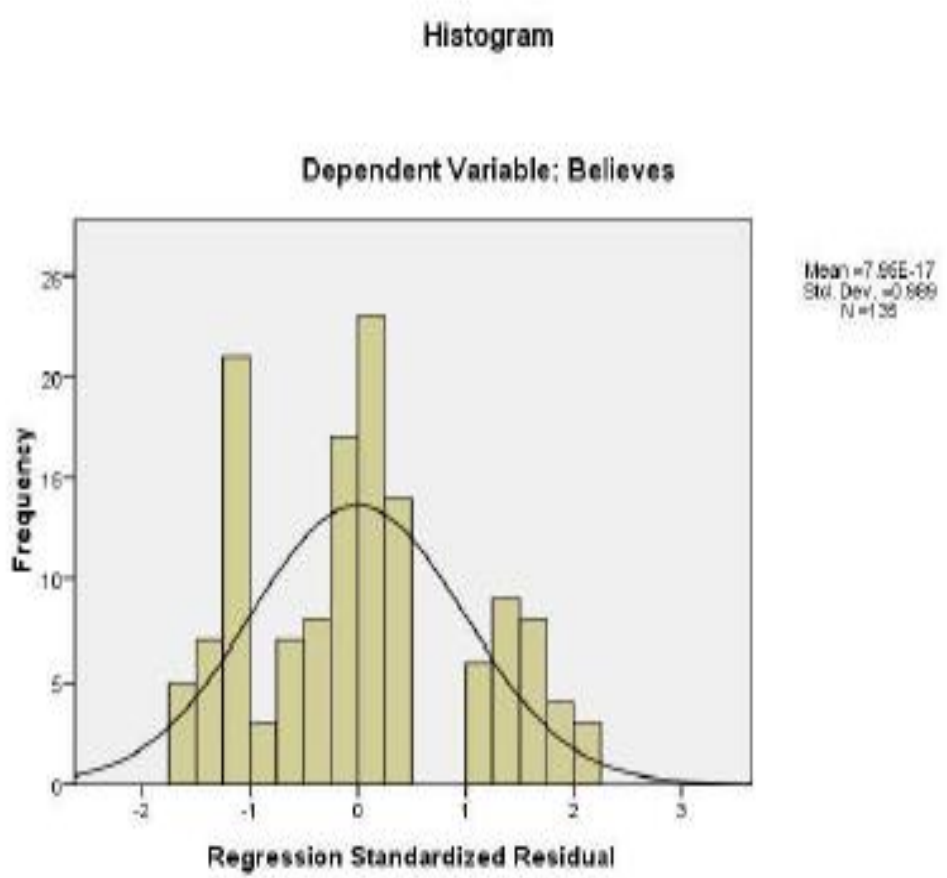
Model			Mechanisms	Country	Industry
1	Correlations	Mechanisms	1,000	,085	-,234
		Country	,085	1,000	,001
		Industry	-,234	,001	1,000
	Covariances	Mechanisms	,003	,000	,000
		Country	,000	,002	,000
		Industry	,000	,000	,000

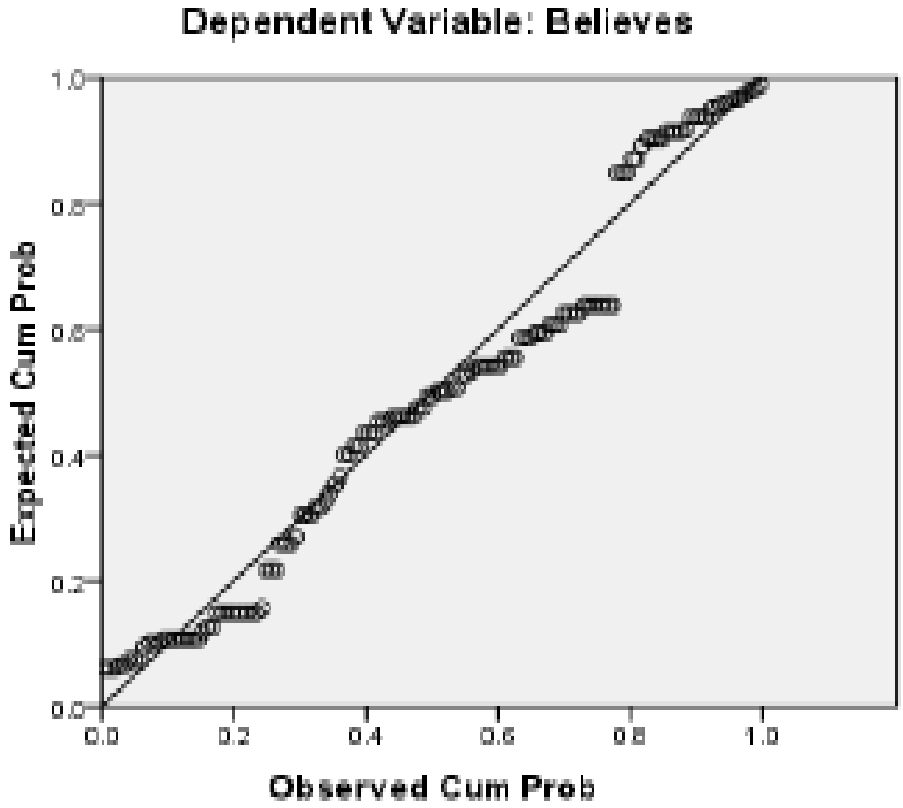
a. Dependent Variable: Believes

Table 8. Residuals Statistics[a]

	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	-,795	1,156	,000	,508	135
Std. Residual	-1,547	2,249	,000	,989	135
Stud. 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

Figure 1.Regresion analysis of the observed analysis





Results:

This analysis takes countries, industries and mechanisms as independent variables and beliefs as a dependent variable, as the survey estimates the attitude, knowledge and situation of business entities.

The results that any change in industries, regulation or mechanisms - will affect the beliefs of subjects and subsequently their behavior.

This assessment shows that Macedonia is at a low level in the development of the circular economy and waste management.

Furthermore, the correlation explains the economic issue in this research. Sources of cost recovery and financing of waste management activities are mainly direct charges for waste transport and disposal.

Fees for municipal waste management services are invoiced and collected directly by public utilities, they are based on flat rates that vary between municipalities, fee levels are low and the percentage of non-payers is often high.

Flat fees for the collection and disposal of commercial and industrial waste are charged by public enterprises, generally at higher rates than for municipal solid waste.

The correlation of the results shows that the main problems of the circular economy and waste management, as well as the limitations in Macedonia, are present in almost all areas and in all relations in society:
.....or.....

- political and legislative framework;
- organization of institutions and human resources,
- collection of costs and financing of services and investments,
-stakeholder awareness and communications,
- all stages of technical management from collection to final waste disposal,
- existence / remediation of burdens in the environment,
-impact on public health and the environment/ with potential impact on the Macedonian economy

Thus, the current state of waste management in Macedonia can be characterized as substandard in terms of human and financial resources, insufficient and ineffective in terms of monitoring and implementing practices, resulting in various dysfunctional systems in society and very similar negative effects on life environment and public health.

Ви благодарам за Вашето внимание!