Supporting Waste Treatment Industry to Meet European Circular Economy Goals

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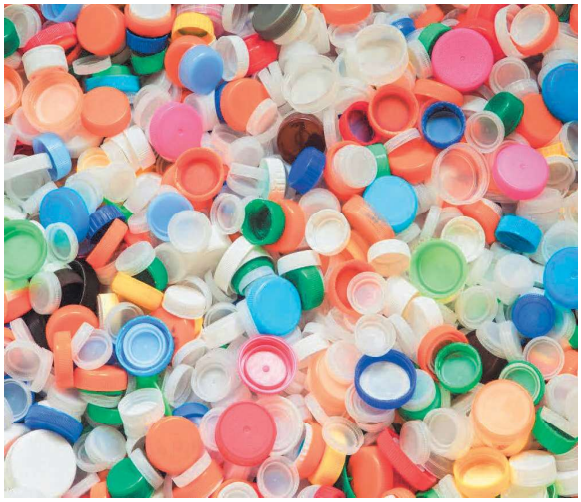


01 Introduction

European policy to promote the transition to a circular economy includes reducing landfilling to 10% and recycling at least 65% of municipal solid waste by 2035.

Although convergence trends have been seen among member states, geographic divergence persists, raising questions about the actual capacity of some countries to achieve the goals.

Trends in recycling rates and landfilling of municipal solid waste are employed to construct a circularity index projected for the year 2035 and compared with the circular economy pathways that countries shall follow to meet these targets.

The impact of the circularity index on sustainability performance, innovation score, balance of raw materials trade, and waste reduction is estimated.

Policy implications are provided to supporting Waste Treatment Industry to Meet European Circular Economy Goals.

02 Objective

Based on 2011-2021 trends in recycling and landfill disposal rates, the paper appraises the likelihood of European Member States achieving circular economy targets.

This study has a number of research questions (RQs) to explore the relationships between the level of circularity and various sustainability outcomes, including sustainability performance, innovation score, resilient raw materials sector, and waste reduction.

We aim to highlight (i) how well are European Members States are performing on their path to meeting European CE goals, (ii) to what extent circularity degree contributes to sustainable development, (iii) if circularity positively influences the innovation score of countries, (iv) in what ways it contributes to building more resilient raw materials sectors, (v) whether circularity reduces the amount of

03 Variables Methodology

- BAL resumes the balance of trade of raw materials between EMSs and is used as a proxy for competitiveness; data source: EUROSTAT database on raw materials;
- CEI is the CE performance index, which considers the two pillars of the CE investigated in this paper: landfilling rate and recycling data source: EUROSTAT CE statistics;
- ENV is the ratio of environmental protection expenses and taxes, reflecting the intensity of environmental spending;
- GDP is the per capita Gross Domestic Product to capture the economic context;.
- INN is the innovation score obtained from the European innovation scoreboard published by the European Commission; data source: European Commission Innovation score;
- INT stands for the interaction between CEI and WtE to understand if the role of WtE remains constant or changes according to the level of circularity;
- MSW corresponds to the total amount of municipal solid waste generated; source;
- PSW captures the per capita MSW production in kg.

04 Analysis

To project the performances to 2035, three variables were defined as follows:

The variable named *observed* is the trend of recycling and landfilling rates available in the EUROSTAT CE database.

The variable named *predicted* is a linear prediction of recycling and landfilling rates to 2035.

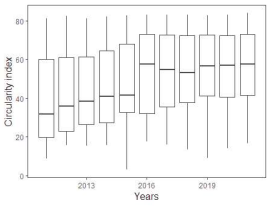
The variable named *compliance* is the estimated recycling and landfilling rates that countries shall follow,

according to the CE goals compliance path as in the following equation $x\_i = (Xi\_target - Xi\_actual)/(target - actual)$.

The impct of the circularity index is estimated as follows:

$$yit = \alpha + \beta_1^T CEI_{it} + \beta_1^T WTEa_{it} + \beta_1^T GDP_{it} + \beta_1^T ENV_{it} + \beta_1^T MSW_{it} + \beta_1^T INTa_{it} + u_{it} + \varepsilon_{it}$$

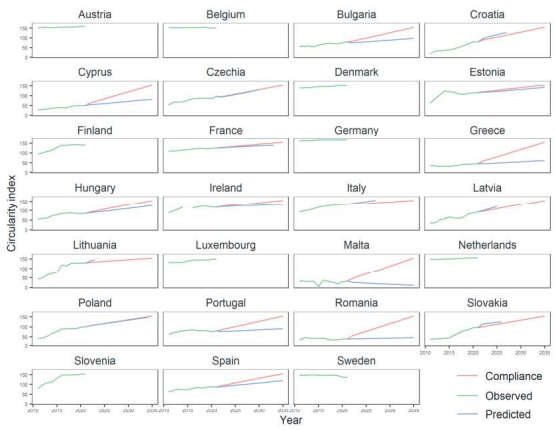
Evolution of the circularity index



Econometric analysis

	SDG Sustainable development	INN Innovation score	BAL Balance of trade	PSW Waste generation
CEI	0.0811***	0.208***	16.57***	1.325***
WTE	0.0658**	0.285	-24.74	-5.573***
GDP	0.0601***	0.409***	10.93	2.804***
ENV	0.869**	7.830**	-80.26	61.73***
MSW	0.0408	0.134	-170.4***	3.462**
INT	-0.000954**	-0.00265	-0.128	0.0842***
Constant	71.57***	63.30***	920.1	278.3***
Observations	297	297	297	297
Number of id	27	27	27	27
R2				
Between	0.457	0.114	0.144	0.346
Within	0.336	0.804	0.226	0.363

Projected performance



05 Discussion*

The paper underlined that only a few of the adopted development strategies might be considered effective in meeting the challenges of CE according to the EU's standards.

Regarding the relationship between CE and SDGs, this paper provides policymakers with relevant insights into the consequences of policies that promote the CE, above all on the difference in outcomes depending on prominent CE fields such as renewable energy, reuse, repair, and recycling. It is important to underline that a shift to a CE can have remarkable sectoral distributional effects among countries and sectors. CE policies need the support of supplementary re-distributional policies.

Our results provide policymakers with information for charting out a waste capacity industrialization path and regulators with data regarding how and to what extent they should define tariffs for the use of facilities. Specifically, these results can support policymakers in designing policies that promote the overall efficiency of the waste management industry to meet CE goals. It is also important to focus policies on the infrastructural capacity of the waste sector by selecting and promoting different waste management structures based on the existing treatment capacity and the objectives to be achieved.

However, for this to happen, there must be broad political agreement, as it is a difficult path, given the complexity of obtaining permits to build new structures and the management of consensus by policymakers. The results also show that the European command and control approach must be supplemented by additional policy measures to promote convergence among Member States. Therefore, countries most deserving of support should be identified, considering incremental costs for separate collection with exemptions of the TCTF requirements, both for the cost of service and tax credit requirements to promote plant equipment.

* Preliminary

06 Conclusion

The evidence revealed the need for many Member States to accelerate the development of structural interventions in plants relating to the waste treatment and collection. EU policy guidelines must include extraordinary measures like those adopted to promote investments in decarbonization.

First, permitting times for waste treatment plants shall be reduced in analogy to as envisaged by RePowerEU to accelerate investments in renewable production. One-stop-shop procedures should also be introduced for plants functional to CE goals to enhance certainty to private investors.

Second, greater flexibility regarding state aid. It is necessary to strengthen the measures to support investments for the CE by extending the extraordinary measures envisaged by the TFCF to investments to achieve the recycling and landfill reduction targets. It would be appropriate: (i) to derogate from the current state aid framework by increasing aid schemes for investments in waste treatment plants, (ii) to simplify the notification procedures to the Commission by including investments in CE in a General Block Exemption with relevant threshold values below which it is not necessary to notify the investment aid.

Third, by allowing service users or waste producers to use tax credit schemes to promote investments at an individual or collective level, we can reduce or prevent waste production or improve the quantity and quality of sorted waste.

Fourth, the Just Transition Fund shall provide for the less-performing countries specific measures to strengthen human and professional skills, which will be increasingly important to ensure a waste collection and treatment system in line with CE goals.

Fifth, CE goals may constitute a driving force for promoting EU leadership regarding the production capacity of waste management and treatment technologies. It is, therefore, necessary that alongside the IPCEI projects that promote research on key technologies for the CE, specific measures are developed, such as those mentioned previously, to promote the development of production capacity supporting industrial development.

Related references

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