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Presentación

Circular Economy, Sustainability and Degrowth

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The Circular Economy (CE) is a set of proposals intended to transform the current linear model of production and consumption towards sustainability. To do so, a plurality of theoretical approaches, objectives and instruments have been encompassed in it.

Since introducing the Circular Economy principle as part of the "ecological civilisation" vision in 2004 in China's 11th Five-Year Plan, it has been incorporated into policy agendas at different levels (China's Circular Economy Development Law, the United Nations' SDGs, the European Green Deal-European Union's Circular Economy Action Plan, CE Strategies or Green Transition Strategies of countries, territories, municipalities, companies, etc.). Although the specific formulations vary considerably, they could be said to share the idea that the CE is a way to promote a change in the economic structure towards sustainability. The CE aspires to deal with climate change and the overflowing waste that affects ecosystems. Moreover, the CE focuses on reducing material consumption, using material efficiently, extending the lifespan of products and "perpetually" reusing materials once they have been incorporated into the system in order to reduce the impacts of extraction-production-consumption activities and waste disposal. Nevertheless, the concepts, motivations, objectives, spheres of action and transforming ambitions of CE initiatives are quite diverse. With this in mind, the three concepts that are included in the title of this special issue cover problems and approaches that may appear to show varying degrees of coincidence or convergence, depending on the theoretical-conceptual framework and the approach adopted.

With regard to the theoretical-conceptual framework, the term "Circular Economy" has been used for many years (Pearce and Turner, 1990), but it is still a concept under construction and, therefore, also in dispute (Reike et al., 2018; Calisto et al., 2020; Vence, 2023; Kirchherr et al., 2023). It has become such a widely used term in academic, business and institutional documents that its corpus has become filled with ideas, methods and proposals born from relatively disparate frameworks (e.g. ecological economics, industrial ecology, industrial economics, industrial symbiosis, reverse logistics, functional economics, eco-design, eco-innovation, blue economy, permaculture and so on). This diversity of sources translates into a vast range of concepts and approaches. Its use may refer to products, processes, materials or behaviour at the micro level or at the macroeconomic or systemic level but, above all, it might adopt a somewhat technological perspective. It may address eco-innovation, eco-efficiency and the search for technical solutions to problems and lead to incremental innovations or relative improvements in relation to the current situation or sustainability issues and proposals to make significant progress towards making the economic and social system sustainable. The main differences deal with the degree of change with respect to the current linear model and the scope of the changes involved, not only in the technical-productive sphere but also in the way of life and consumption habits, in the economic rules, in social justice, in the socio-economic model and in the way that the global economy is run. The diversity of CE approaches span from formulations that share criteria and objectives proposed by post-growth or degrowth scholarships to more business-as-usual approaches. Nevertheless, a great deal of CE initiatives focus on problems linked to the end of life of products and materials, waste and recycling, which are merely constant palliative reactions to the serious consequences of the linear model (see the case of Europe, Pinyol Alberich, 2022; Nogueira, 2023). In the middle, there are many reformist proposals focusing on the CE of products, reducing material consumption, extending the lifespan of products via eco-design, repairing, remanufacturing, sharing consumption, functional economies and so on (Stahel, 2013; EMF, 2013; Gallaud & Laperche, 2016; Geissdoerfer et al., 2017; Pereira, 2023; Vernier, 2024; Merlin, 2024). Tackling the problems of climate change and the sustainability of life on the planet as we know it, with ambition and realism, requires much more profound

changes. To begin with, an understanding of what allows the life of products and equipment already in use to be prolonged is needed in order to stop new products from being made and new materials from being sought, which implies questioning the logic of capital accumulation based on the continuous expansion of production and consumption of new goods (Calisto et al., 2020; Genovese & Pansera, 2021; Vence 2023).

The aim of this special issue is to compile articles that will allow us to gain a greater understanding of the foundations of the CE and coherence issues between the proclaimed goals and the specific goals, instruments and measures which have been put into action by governments and companies. We consider that this is not only a theoretical and academic necessity but also a way to respond to the practical demand suggesting the implementation of ambitious changes towards truly sustainable economies.

Indeed, although the circular economy is very present in political discourse, regulations and business strategies, it is more difficult to observe the implementation of these projects and the positive externalities (jobs, innovations, pollution reduction, etc.) that result from them. Therefore, this "paradox of the circular economy" (Vence et al., 2022) needs to be studied in depth.

A realistic analysis of the necessary changes, drivers, barriers and consequences of the CE is essential from both social and territorial perspectives. Additionally, we believe that a thorough consideration of the diverse starting points in different countries and territories is crucial to foster a genuine and equitable transition. It is important to recognise that profound structural change will inevitably impact not only production models but also consumption patterns, lifestyles, and, consequently, social relations, as well as interterritorial and international dynamics. The aim of this special issue of the *Revista Galega de Economía* is to contribute to the theoretical and empirical analysis of the CE and its relationship with sustainability, including all kinds of critical perspectives such as degrowth and post-growth. The issue presents eight articles empirically addressing different aspects of CE and sustainability.

The contributions included in this special issue range from changes in the product cycle to material cycles and recycling. The first two articles focus on policy measures to promote the CE of products; the third and fourth address the barriers to the introduction of circular business models; the fifth and sixth discuss the issue of materials, material sourcing and international trade in secondary materials; the last two address the issue of waste management in general and plastics specifically from a CE perspective. From a geo-economic point of view, the articles analyse the respective problems in different countries or regions, e.g., the EU, Latin America and the Maghreb.

The first two articles analyse the steps taken in the EU to promote a product-centred CE, specifically eco-design and repair as possible strategies to extend the useful life of products and reduce the environmental impact of productive activity, while at the same time ensuring that this extended durability responds to consumer interests and their rights. In the first article, Beltrán Puentes analyses the new European ecodesign regulation, the extension of its field of application and the generalisation of durability and repairability requirements, as well as the limitations and weaknesses of the regulation introduced to move towards a CE, which exist largely due to the ability of the industry to set the standards and the reluctance of the European Commission to set objectives and requirements.

In the second article, Francisco L. Bermúdez and Xavier Vence carry out a critical analysis of the European Directive on the right to repair, approved recently, in 2024, highlighting the factors that explain the limited scope of the changes introduced, focusing especially on the analysis of the positions of the different actors involved throughout the process of drafting

it. The study shows the decisive influence that industries and member states have had over the limited ambition of the directive, which should promote repair as a key element in the durability of products and the prolongation of their useful lifespans.

In the third article, Sugey de J. López Pérez analyses the barriers to the diffusion of new circular business models (CBMs) in the electrical and electronic equipment (EEE) industry in Mexico, from the production phase to consumption, post-consumption and the management of waste (the Waste Electrical and Electronic Equipment Directive [WEEE]) generated in the country, including the external inflows and outflows. Consequently, it formulates a policy package integrating those policy measures, spotlighting the financial and fiscal ones, which can contribute to the promotion of CBMs along the EEE chain.

In the fourth article, Rafael Apolinario Quintana, Martha Rodríguez Donoso, Carlos Apolinario Quintana and Fernando Jose Zambrano Farías analyse the obstacles to the implementation of MNC and, in particular, reverse logistics, by Ecuadorian companies, showing both external factors related to infrastructure and reduced public and private investment, and internal factors related to the weight of cost-benefit criteria in the country's business culture.

In the fifth article, Leandro Llorente González analyses the trade of circular raw materials (secondary materials) of the European Union (EU), both extra-community and intra-community. He discusses the European strategy to boost the international market for recyclable raw materials (RRM) and analyses in detail the trade flows in RRM between the EU and the rest of the world and between the countries that make up the EU over the period 2004-2020. The results show the differentiated patterns of imports and exports of RPMs as well as clear evidence of the unequal distribution of benefits and environmental damage caused by international trade that give continuity to previous patterns of ecologically unequal exchange.

In the sixth article, Pablo Alonso Fernández, Rosa María Regueiro Ferreira and Xoán Ramón Doldán García study the evolution of the material footprint in the countries of the European Union-15 (EU-15) in the last 20 years, discussing whether or not a dematerialisation process exists in these countries. Their empirical study demonstrates the persistence of coupling between GDP and the material footprint, with the exception of a certain degree of conjunctural dematerialisation in the years immediately after the 2008 crisis.

In the seventh article, Mahfoudh Hassaine and Belaid Abrika carry out a study of waste management in Algeria, examining the political measures put in place by the government to incorporate the principles of sustainable development and the circular economy into integrated waste management. The study shows the slow and complex step from reactive management to a National Integrated Waste Management Strategy from 2016, guided by the attempt to introduce a circular approach to sustainability and cost-effectiveness.

Finally, in the eighth article, Iria Vázquez Silva and Javier de Rivera Outomuro study the case of plastic waste management in Morocco and the unequal working conditions of the workers (formal and informal) that make up this sector and their role in its transformation process towards the circular economy. The qualitative study involving different actors allows us to understand the complexity of such a transition in developing countries and its challenges in terms of social justice.

We believe that this special issue brings together a series of relevant contributions that allow us to further our understanding of a range of aspects of the CE, taking as reference points different approaches and phases of the production-consumption-post-consumption chains, focusing in some cases on the diagnosis of the empirical reality and in others

on the public policy instruments formulated to introduce CE and sustainability objectives and criteria. The growing academic research on the various aspects of the CE from its conceptualisation, to its relationship with other issues or conceptual frameworks such as green growth, de-growth and post-growth, has opened up debates that are still active and require new contributions. The same applies to the analysis of the tools for assessing the degree of circularity of the proposed or implemented changes, the policy instruments used or soon to be used to promote the transition to the CE (e.g. regulatory, financial and taxation measures, public procurement, industrial, agricultural and consumption policies, policy mixes, policy packages, and so on).

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