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Circular Economy: The Strategies to Global Business Economics

Woodrow W. Clark II and Danilo Bonato

Abstract

Economics needs to change from being a linear theory into being circular because of the need to be more scientific due to the use of both quantitative and qualitative, which reflects science in theory and practice. The application of circular economics to businesses, both in existing and new entrepreneurship, provides a construct way to address, change and reverse climate problems.

Keywords: climate, qualitative, quantitative, economics, science, theory, practice

1. Overview

Europe and the whole world are facing several pressing issues concerning climate change, the environment, society and the economy, which are crucial to the quality of life. The **Circular Economy** (CE) is the answer to some of the main challenges of our time. It helps today to preserve resources that are increasingly scarce and subject to greater than ever, environmental pressure. It boosts Europe's economy and competitiveness, by generating new business opportunities as well as innovative and more efficient ways of producing and consuming. It brings local jobs and creates opportunities for social integration and cohesion. And even finds an answer to the terror of the fanatics: provide desperate people with viable, safe and strong future for their families and children.

2. The European Union: Horizon 2020

For these reasons, in 2013 the European Commission launched a new and comprehensive research and innovation program called Horizon 2020 which will have to introduce a more focused approach to concrete solutions to climate change and environmental challenges. The European Union Circular Economy is a long-awaited package that will play a key role in supporting this transition to the future, today, by providing a clear message to the industry and society on the pathway forward. The package drives investments and creates a level playing field, removing obstacles stemming from European legislation, deepening the single market, and providing favorable conditions for innovation. Experts agree that it is of particular importance that this program is not only convincing from the point of view of research, but that it is also relevant in terms of contribution to the achievement of the objectives of the European Union, including prosperity, quality of life, sustainability, growth and employment.

Conventional Neoclassical Economics vs Circular Economics

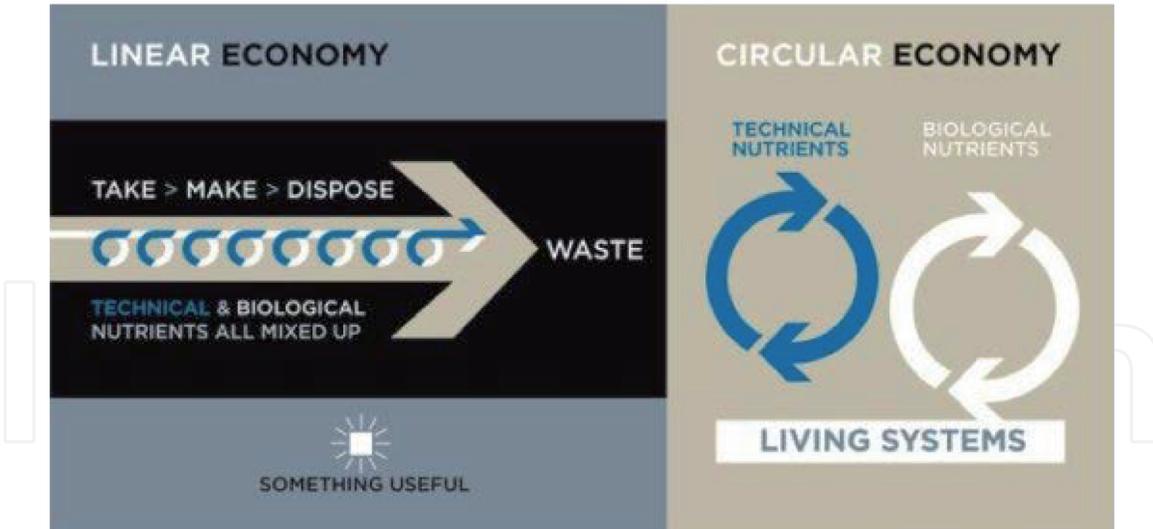


Figure 1.
Danilo Bonato.

One of the main objectives of Horizon 2020 is to position Europe as leader in the development of a “circular” and “green” economy, based on the concept of sustainability: at this particular moment in time the EU must strengthen its international competitiveness through the productivity of resources and the improvement of the capacity to provide the world with low environmental impact technologies and services, oriented towards an efficient use of resources.

This is therefore an epochal change that must move us away from the conventional neo-classical economy of Adam Smith as Clark and Fast documented and established in their first book, *Qualitative Economics* [1, 2] that includes other aspects in our development models as well as the “market”.

The chart below shows how the Circular Economy works, and has been working in different countries and communities already (**Figure 1**).

The European Union (and the world) is facing a series of systemic crises affecting the environment, natural resources, economic and social aspects, with very critical implications such as population growth, conflicts and wars. To address these systemic challenges successfully, we need eco-innovative solutions, capable of transforming economies and making the lifestyle of European citizens more sustainable as Clark and Cook documented in their book on *The Green Industrial Revolution* (English 2015 and Mandarin 2014) as well as others about the technological, science, public policy and economic solutions to climate change.

3. China: green development

The “disruptive green revolution” (GIR) as “green development” in China has already begun in Europe and is now penetrating China and other parts of Asia.

For example, on 16 July 2018, China and the EU signed a MOU on working together with Circular Economics. Then in late fall 2018, a report was done and released for China to plan and work in this area as a key part of the Chinese Plan for Green Development and a New Silk road starting from east coast of China [3] (**Figure 2**).

We need a solid systemic eco-innovation, inserted in a broader perspective that considers all the innovative solutions able to contribute to the development of the three fundamental “axes” of sustainability: economic, social and environmental.

The City of Shanghai



Figure 2.
Wikipedia: Shanghai, China.

From this point of view, the circular economy is the most effective approach in terms of the model of development and has recently become the strategic reference areas for ALL the EU countries and also thanks to the commitment of the Belgian Presidency of the Council of the Union European Union (Flemish Environment Minister Joke Schauvliege).

MEMORANDUM OF UNDERSTANDING ON CIRCULAR ECONOMY BETWEEN THE EUROPEAN COMMISSION AND THE NATIONAL DEVELOPMENT AND REFORM COMMISSION OF THE PEOPLE'S REPUBLIC OF CHINA

Signed on 16 July 2018 as: “The signing of an agreement on Circular Economy (CE) by the world’s two largest economies that could soon accelerate adoption of circular economy practices at a global scale, creating potential for a ‘system shift’ towards a low carbon, regenerative economy.” The next step was for the a new analysis on CE by the Ellen MacArthur Foundation, to be published in December 2019 that finds that a transition to a Circular Economy in China’s cities could make goods and services more affordable for citizens, and reduce the impacts normally associated with middle class lifestyles, such as traffic congestion and air pollution.

4. Ellen MacArthur Foundation report

The Report was released in December 2018 and done by Arup Corporation (as noted below from its Cover) who are located in the EU and a long-time involved science, technology, engineering and economics company for many regions, nations and cities around the world [4, 5] (**Figure 3**).

One of the critical tasks of the Circular Economy package is the development of innovative product requirements under the Eco-design directive, such as durability and recyclability. In this respect, it is very likely that the Commission will adopt a proposal to differentiate fees by producers in Extended Producer Responsibility schemes according to the real end-of-life costs and recyclability of their products.

As part of the regular reviews of BAT (Best Available Techniques), the circular economy package should also include guidance on best waste management and

Arup Corporation Report on Circular Economics for Ellen MacArthur Foundation

THE CIRCULAR ECONOMY OPPORTUNITY FOR URBAN & INDUSTRIAL INNOVATION IN CHINA



ELLEN
MACARTHUR
FOUNDATION

ARUP



Figure 3.
Copyright: Ellen MacArthur Foundation.

resource efficiency practices for production processes in industrial sectors, improving the uptake of the European Eco-Management and Audit Scheme (EMAS) and the environmental technology verification system as well as methods to evaluate and make decisions on products (health, environment and nature ingredients and more) such as “earth accounting” has started to do within the circular economy paradigm (<http://www.earthaccounting.com>).

What is critical now is that China sees the CE as part of its move into The Next Economics [6] due to Qualitative Economics (2008 and now 2019) playing a significant role in how economics works and should work (**Figure 4**).

The reference models underlying the circular economy stem from the collaboration between the industrial design strategist, William McDonough (Cradle to Cradle (C2C)) and the German chemist Michael Braungart, both collaborators of the Ellen MacArthur Foundation.

One of the key priorities for Europe in the circular economy is that of resource efficiency and waste reduction (Zero Waste Strategy). In this field several *stakeholders* are active, such as Remedia, the collective system of manufacturers of electrical

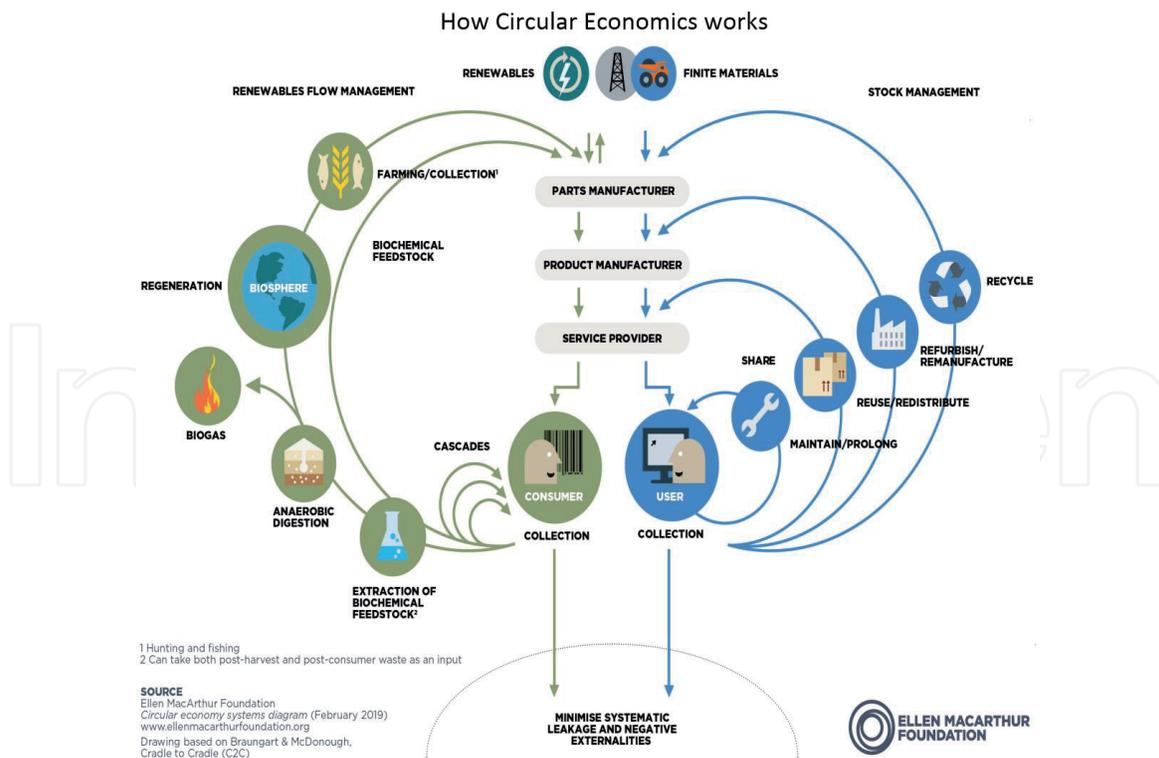


Figure 4.
 Ellen MacArthur Foundation plan.

and electronic equipment that is developing a long-term vision to fully exploit the potential of secondary raw materials and to increase the innovation capacity of the recycling sector in the EU [7].

There is also an absolute need to improve the awareness of European industry in terms of access to critical raw materials, thanks to a closer monitoring of the global markets of non-energy resources. Too many companies ignore the fact that their products are threatened by the risk of future, reliable and fair supply, of strategic resources.

5. Economics must be both Qualitative and Quantitative

When economics is referred to as a science, it must act and perform as science which is both qualitative and quantitative. There are two critical factors to follow:

- a. *Economic importance*: This analysis is obtained by evaluating the share of each material associated with macro industrial sectors at European level. These quotas are therefore related to the gross value added of the macro sectors compared to the GDP of the EU. The value obtained is then evaluated on the basis of the total EU GDP in order to define an index of global economic importance for a given material.
- b. *Supply risk*: The World governance indicator (Wgi) is used to measure this risk. This indicator takes into account a very wide variety of criteria, such as levels of responsibility, political stability, absence of violence, government effectiveness, quality of legislation, rule of law and control of corruption.

Minerals and critical metals are essential for environmental technologies such as solar photovoltaics, wind power, lighting and for low-carbon electric vehicle

industries. Interruptions in the supply chain in times of crisis can be dramatic from the environmental, social and economic point of view. This is the main reason why there is a need for a global framework in terms of access to raw materials, capable of overcoming the traditional neoclassical model of supply and demand.

While the science of chemistry is important, the issue is to be able to recycle and reuse the plastic that is made and used for bottles, packaging and more. Now, the plastic can be gathered from reusable products that provide a resource from which to make new products (**Figure 5**).

In a circular economy, buildings would be modular, durable, and flexible. The benefits of digitizing the built environment would go beyond improving energy efficiency and enhance productivity overall. Embracing a circular built environment would reshape both asset utilization and material management in the sector. Inhabitants would enjoy better indoor and outdoor air quality.

The qualitative leap can only be made if we know how to acquire in-depth knowledge about the availability of secondary raw materials. It is also necessary that the actors of the system (raw materials industry, end users, institutions, companies and consumers) collaborate closely to achieve common reuse and recycling targets along the entire production and distribution chain. In this way consumers will know exactly what they are buying and the impacts and potential for re-use and recycling of the products they have chosen.

Moreover, collection systems are still too expensive and inefficient which does not help industrial companies to abandon the traditional production systems based on the linear (flat economic) transformation of materials into products and their disposal once they are consumed. Therefore, the Commission is considering the possibility of introducing further simplifications to promote increased efficiency of collection systems through the circular economy paradigm. Hence by integrating these systems with the upstream industries that make use of recycled components and raw materials from products entering, the end of their life stage can be profitably met as well as protecting the environment (**Figure 6**).

Case of Plastics from the MacArthur Foundation



Figure 5.
Copyright: Ellen MacArthur Foundation.

Communities relations needed for Circular Economics



Figure 6.
Copyright: Ellen MacArthur Foundation.

Many modern products, especially those of high-tech media and those that transit the web and social networks are truly global, from their creation to distribution and sales. Tools like Netflix, YouTube, Facebook and other forms of communication must be part of a circular economy model that directs towards the reuse and recycling of products in order to create new ones. The whole process can and must be improved.

6. Conclusion as next steps

Success will only be seen when we are able to achieve a series of improvements over access to and availability of raw materials, with sustainable resource management within a greener, more circular economy and global eco-innovations in technology both in commercial practices to meet the growing demand and ensure the needs in terms of raw material supply. This effort should also lead to changes in behavior that are more consistent with consumers' sustainable use of raw materials.

The dynamics linked to the circular economy can thus be transformed into a solid pillar of the growth strategy of the European Union. The world of industry, in collaboration with governments, must work to address social environmental

challenges and generate concrete benefits for individuals and their communities, especially for families and relatives today which is tomorrow now.

Above all, Circular Economics is global, and is NOT based on supply and demand. Nations, regions, cities and communities all need to be joined together as they: (1) work to reverse climate change, (2) create new business models and systems, (3) develop new areas of work, business and family, and (4) create areas that are needed now and into the future for ALL people around the world.

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