



## Circular economy and environmental protection

Filippo Sgroi\*

Department of Agricultural, Food and Forestry Sciences, University of Palermo; Palermo 90128, Italy

\* Correspondence: Email: [filippo.sgroi@unipa.it](mailto:filippo.sgroi@unipa.it); Tel.: +3909123896615; fax: +39091484035.

**Abstract:** The circular economy represents a form of corporate production with respect to environmental resources. In the past, these production systems were widespread on the basis of the non-removability of the production factors. The advent of economic growth, in capitalist economies, has led to the deconstruction of production cycles resulting to a food product being produced in one part of the world, whilst the raw materials and processing phases are carried out in several parts of the world, due to the low production costs there. While these economic systems, on the one hand, have led to a growth in the global economic system, on the other hand they have determined the impoverishment of the territory as many companies, at least the uncompetitive ones, have disappeared. In this work, starting from examining the circular economy models, we analyze a development and growth scenario from a circular business perspective. The work highlights that the adoption of circular economy models has higher costs for the companies that implement them and therefore, to become long-term production systems, they need either cooperation among several companies to reduce the average total cost or a potential public contribution in their starting phase. The results of this study highlight that the adoption of circular economy models results in advantages at the microeconomic level. In the event that the cost of the investment cannot determine an advantage at a microeconomic level, one could think of solutions envisaging several companies that adopt a common logic of making the investment in a circular economy. The positive effects occur at the company, family and local levels.

**Keywords:** resilience; sustainable development; business performance; cooperation; competition; respect for the environment

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## 1. Introduction

The circular economy is often heralded as a system that will allow for long-term green growth [1]. Looking closely at the circular economy [2], it can be seen as an economic system where waste materials are minimized and where everything has a use [3], with a view to reducing the impact on the environment [4]. The economic growth in these production systems, oriented towards the circular economy [5], is seen as a development of the companies operating in it and where the waste produced by one company is an input for other companies [6], thus favoring circular business models [7]. If, in the past, economic growth was seen as dependent on the "green" aspect, we wonder how we can change production methods by including respect for the environment as a constraint [8]? Furthermore, we ask ourselves if in the economic systems of industrialized countries, a circular economy is compatible with economic growth. In the short term, the incentive to adopt circular production systems determines a process of adaptation of production systems, plants and machinery. In our opinion, in the light of this new orientation, the capitalist economic systems have two ways to go. A first path concerns the adaptation of production processes to circular economy systems. The adoption of these systems leads to investments and loss of profits. In this respect, the circular economy can represent an entrepreneurial and territorial success strategy. While there may be losses in profit in the short term, in the long term, once the situation of the circular economic system is consolidated, the course may have changed. To determine whether such an effort for the adoption of circular economy could be successful, an assessment of economic convenience must be made. In a first phase there is a narrowing of the circuits, which implies the use of local resources in the production of goods and services. Moreover, efficiency must be taken into account, which implies a minimum use of local resources. Production cycles focus on recycled materials. Slowing down cycles involves extending the use phase of products, for instance through long-term design and maintenance operations. This can be accompanied by the dematerialization of the provision of services and software solutions in lieu of physical products (eg product as a service).

## 2. Circular economy strategies and business models

Most of these strategies require the use of financial resources and therefore, at least in the short term, have a negative impact on companies' profit margins. To close their cycles, for example, companies have to bear the cost of recycling materials (think of the use of animal waste), whilst slowing down the cycles entails repair and maintenance services. All this leads to an increase in costs with the consequence that if you operate in a market of perfect competition, where companies suffer the price, there is a lowering of profit margins. If on the one hand these production aspects, linked to a regard for the environment, have a positive impact on the local ecosystem, on the other hand these strategies clash directly with an economic policy that is based on continuous economic growth with the aim of lowering increasing production costs and maximizing profits. However, it must be pointed out that in an economy based on economic growth, companies that apply circular business models face competition from competing companies that do not apply circular economy models and that are cheaper. This shows that, in the economic world, there are few innovators and many imitators. In these economic systems, if undifferentiated products are produced and consumers are unwilling to pay a price premium, there is a risk that companies that adopt circular businesses are put on the sidelines of the market as they are unable to withstand the competition. The use of the step-by-step strategy can

represent a partial adaptation strategy that can go hand in hand with profitability; in fact, many companies today use the strategy of learning by doing and are the best in terms of resource efficiency to reduce their production costs. These improvements translate into an increase in corporate competitiveness in an economy based on economic growth. However, it should not be underestimated that the adaptation of business strategies can gradually have a rebound effect on the environmental balance as the increase in business efficiency and the increase in the number of products manufactured and consumed [8]. This negative aspect linked to growth resulting in a negative impact on the profitability of companies and growth can be mitigated by the business opportunities offered by circular business models. For example, the decline in revenue related to product sales can be alleviated by adopting a product-as-a-service business model (i.e. associating service with produced goods [9]). Likewise, the additional costs incurred by companies for providing repair and maintenance services and durable products and ensuring that materials are recycled can be covered by premium prices. Although these assertions are well founded, empirical evidence [10] tells us that these models have limitations. The premium price is limited to customers who have a high income and who can therefore afford to buy products that have a higher price and therefore from this point of view it could determine a limitation of the growth potential of food products that derive from systems of circular economy production. So, in a first phase, at least the launch phase, these products, despite deriving from circular economy production methods, have a higher unit cost, which leads to a higher selling price. However, if the product is not easily recognized on the market, and if the price premium is very high, the range of consumers who can afford the purchase is rather limited. To mitigate these obstacles, strategies can be adopted at both the microeconomic and macroeconomic levels. Under the first aspect, in order to lower the average unit cost, one could think of circular economy projects that are carried out by several companies, for example for the use of machinery that can exploit 100% of their capacity. The sharing of the plants among several companies allows the reduction of the fixed unit cost and therefore the total unit cost. In the case of undifferentiated food products, where the cost increase cannot encumber the selling price, this strategy may lead to the mitigation of the cost increases that would inevitably fall on the company, at least in the short term, as not all of them can weigh on the consumer. Under the second aspect, the community, and therefore national governments, should be responsible for the transition towards circular economy models. The poles public intervention techniques could relate to capital grants (part of the investment to be made) or interest payments. An aspect that is important to highlight concerns the share of public aid. In our opinion, it should never be 100% as it is necessary to make the entrepreneur responsible for the project and therefore there must always be a part of private capital in the project as this raises awareness of their ability to manage risk. The public contribution could derive from tax revenues resulting from a taxation on all economic entities that benefit from the adoption of circular economy systems [11]. In this way, consumers and producers are made aware of systems that have a positive impact on the local economic system. The model that can best define the adoption of circular economy models is the Canvas model described in the book "Business Model generation" by Alexander Osterwalder and Yves Pigneur (2010) [12]: "A business model describes the rationale for how an organization creates, distributes and captures value". In particular, in our case the customers who are the central pivot of the business model, are represented by the users of the circular economy model. Value is the combination of a new product that derives from the circular economy model that is re-created. The channels represent the communication points between the company and the environment of the social interlocutors who receive positive externalities from the adoption of circular economy models. The management of the relationship with the users is a relational one that is

created in the case of collective business models. The relationship between the users and the central model is managed. Subsequently, the revenue flow model must be implemented, which is essential for the success of the initiative. To function, every business model requires some key resources, which is fundamental for their success. These resources can be diverse: material (property, machinery, etc.), financial, intangible (patents, licenses, data, etc.) or human resources. Furthermore, the fundamental key activities are important for the functioning of the business model and therefore to make the value proposition. Another main aspect is the "block" concerning partnerships. They are necessary for competition as sectors become increasingly unstable with asymmetric competitors. Consequently, partnerships become a way to reduce risks and being able to acquire resources in a timely manner; moreover, as will be further explained in the following discussion, they can be an excellent strategy to defend against Disruption. Finally, it is fundamental to contain the structure of the costs generated by the business model. Circular economy occurs for example in the case of using vineyard pruning residues for the production of pellets for heating purposes. The pellets produced could be used within the company itself (domestic or corporate consumption) to reduce electricity costs. The economic convenience occurs if the investment for the construction of the plant for the production of pellets determines a reduction in the annual costs for heating. Therefore, the multi-year cost of the investment, which must then be reported at an annual cost through the re-integration fee, must be such as to determine a lower annual cost. In this case, there is a real economic advantage in making the investment. In the case of large areas under vines, an example of areas strongly suited to viticulture, one could think of systems that are made by several companies and whose benefits advantage them. In this case, a virtuous economic growth condition is determined, which resorts in endogenous growth.

### **3. Discussions**

The adoption of circular business systems determines a temporary competitive advantage that could become lasting. The competitive advantage acquired disadvantages companies that do not adopt the same business strategies towards circular economy businesses. The implementation of development models that favor circular business can also be transformed into economic growth models once the initial moment is passed with an increase in company profits that can be distributed to shareholders or reinvested in the company, favoring even more investments that consolidate circular economy models. A problem not to be underestimated concerns the link between costs and revenues. The costs also include the loss of income that derives from the start-up phase of the initiative, that is, in the initial phase of the investment, until the project is fully operational, whereby there will be a loss of income deriving from the phase preceding the investment. In the start-up phase also, this problem would get worse over time. Therefore, a circular economy model will be valid if the initiative's revenues are greater than the costs (including the lost income of the ex-ante situation). From an environmental point of view (depending on the lower impact on the environment in terms of pollution and resource exploitation), it is essential to pursue and promote circular business model strategies. With this in mind, public opinion must be raised in the purchase of food products that derive from circular economy strategies. By addressing a circular economy model and maintaining it, growth is likely to represent an indispensable challenge. In an economic system where there are circular economy business models, the foundations are created for an individual and collective level of well-being of local communities [13]. This system promotes balanced growth where business organizations should even selectively experiment with certain forms of growth. Most likely, in a circular economic

system, society would involve a profound reconsideration of the very meaning of doing business, which should be centered on the values of cooperation, care, sharing, community and solidarity instead of profit favoring the accumulation of capital. Companies should embrace the principles of durability, efficiency and frugality that are at the heart of the circular economy [14]. If we reflect on these principles, they are at the basis of the harmonious growth of all the components of the economic system. However, they should also go beyond these by actively engaging in maximizing the well-being of both human and non-human life [15] through not only job creation but also community building and empowerment and consideration for non-human life and its well-being. This can be done, for example, by the adoption of a community or cooperative property characterized by democratic participation in the decision-making process and the equitable redistribution of the economic surplus [16]. Keeping business operations small-scale and localized to primarily serve the needs of local communities are other ways to achieve these welfare outcomes [17]. These company-wide measures should be encouraged at the macroeconomic level through appropriate public policies, looking at social well-being and giving a strong sensitivity to environmental sustainability. Ultimately, an approach to circularity should consist in reorienting economic systems towards growth models that respect the environment as well as human and non-human well-being. The field of application of circular economy models benefit territorial economic systems. In this paper we have seen how, in the case of areas strongly suited to viticulture, they can benefit both at a microeconomic and macroeconomic level.

### Conflict of interest

The author declares no conflict of interest.

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