Is the circular economy a choice or a necessity?

The term circular economy (CE) has both a linguistic and descriptive meaning. Linguistically it is an antonym of a linear economy. A linear economy is one defined as converting natural resources into waste, via production. Such production of waste leads to the deterioration of the environment in two ways: by the removal of natural capital from the environment (through mining/unsustainable harvesting) and by the reduction of the value of natural capital caused by pollution from waste. And the word circular has a second, inferred, descriptive meaning, which relates to the concept of the cycle. There are two cycles of particular importance here: the biogeochemical cycles and the idea of recycling of products. By circular, an economy is envisaged as having no net effect on the environment; rather it restores any damage done in resource acquisition while ensuring little waste is generated throughout the production process and in the life history of the product. Recycling has been a significant part of sustainable practice for many years, and it is fundamental to the Circular Economy (Murray, Skene & Haynes, 2015).

The industries are consuming natural resources on a very high scale, and this is leading us to the depletion of natural resources on a very high degree. Most of the economies are still working on a linear economy method which means that they just use the natural resources and are not contributing anything back to the environment which needs to be changed because soon there no natural resources to be consumed. Natural resources cannot be grown in a year or two, they need decades to recover and with this speed of utilization, we are not giving natural resources a chance to recover. The circular economy does not provide that much of time to recover, but with the

help of a circular economy, consumption of natural resources can be declined, and we can shift more towards recycling and reusing the product. The circular economy is focused on maximizing what already is in use (Esposito, Tse & Soufani, 2017). According to Ghisellini, Cialani & Ulgiati, (2016) all in all, the challenge ahead towards a preventative and regenerative eco-industrial development is not a “ more of the same” approach, calling for increased implementation of “ green” technologies, but instead requires a broader and much more comprehensive look at the design of radically alternative solutions, over the entire life cycle of any process as well as at the interaction between the process and the environment and the economy in which it is embedded, so that the regeneration is not only material or energy recovery but instead becomes an improvement of the entire living and economic model compared to previous business-as-usual economy and resource management.

In industrial ecology, it is implied that a circular economy will be beneficial to society and the economy as a whole. Benefits will be obtained, not only by minimizing the use of the environment as a sink for residuals but – perhaps more importantly – by minimizing the use of virgin materials for economic activity. Intuitively, the potential benefits seem straightforward, but it is important to stress that the perspective prevailing within the circular economy approach is, in fact, based on physical rather than economic observations. Many adherents of the circular economy approach are strong proponents, on environmental and ethical premises, of material reuse and recycling. However, in a market economy (and in some planned economies as well), the prices of materials and natural resources will be too low and will

mainly reflect the costs associated with mining and short-term values, but not with depletion nor the environmental costs. In such cases, only a limited range of circular options will make sense from the perspective of company managers. It can be argued that if companies are rational and profit-seeking, the recycling and reuse options should already have been realized. In a conventional capitalist economy, recycling will be undertaken only where it is desirable from a private economic viewpoint (Andersen, 2006). Circular Economy is aiming at a closed loop, eliminating all resource inputs and waste and emission leakages of the system, the goals of sustainability are open-ended and different authors address a considerable multitude of goals, which also shifts depending on the considered agents and their interests. (Geissdoerfer, Savaget, Bocken & Hultink, 2017).

According to Lieder & Rashid (2016), there is a notion of maximizing environmental benefits by strict control of industrial businesses. On the contrary, manufacturing companies possess potential awareness about the environmental impacts of their industrial activities. However, due to competitive pressure environmental impacts will most likely remain unconsidered as the primary focus is put on economic benefits and growth. Given the scenario that industrial businesses do not see (economic) advantages of CE will result in reluctance when it comes to pursuing CE-initiatives. This scenario makes a concurrent process obligatory to converge and compromise interests of public institutions (top) and multiple industrials actors (bottom) to avoid the prioritization of environmental benefits at the expense of economic growth and vice versa.

The circular economy must not be a necessity now but with depletion of natural resources at a high rate, soon economies will have no choice other than to start working in a circular economy. We are living on the same planet; we share resources and we share fate. As the circular economy's objective is to decouple growth and production from a dependence on natural resources, the circular economy model requires us to implement new paradigms into today's systems on a collaborative scale to make a real impact. The industrial revolution and our resulting linear economy may have forever changed the Earth's ecology and our relationship with the environment, but what is changed can continue to change, this time for the better.

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