



The Contribution of Circular Economy (CE) to Enhance Sustainability of Plastics Waste Small Medium Enterprises (SMEs) in Ghana.

Rev. George Kwasi Agbenyegah, Planning and Research , Ghana Christian University College, Ghana.
Dr. Kofi Ampomah-Benefo, University of Ghana, Legon, Ghana.

Abstract

Circular Economy is defined as "an economy system that represents a change of paradigm in the way that human society is interrelated with nature and aims to prevent the depletion of resources, close to energy and materials loops and facilitates sustainable development (SD) through its implementation at the micro (enterprises and consumers), meso (economic agents integrated in symbiosis) and macro(city, regions and governmental levels (Geissoerfer, et al, 2017). CE expresses itself in five phases (take, make, distribute use and recover) as a supply chain across multiple industries (Prieto-Sandoval, Jaca and Omazabal, 2017). It evolves as a newer philosophy that optimises financial, social, technical, ecological and institutional factors of the businesses to transform the entire society towards becoming more sustainable through the involvement of all concerned stakeholders. Even though, CE research and adoption within industrial supply chain with sustainability has been phenomenal, it is rather scant within Small and Medium Enterprises (SMEs) globally and Ghana is not an exception hence the aim of this research is to facilitate SMEs to achieve greater sustainability through CE implementation in Waste Management. The research reveals issues and challenges, strategies, resources and competences required for implementing CE in Ghanaian Plastics Waste SMEs.

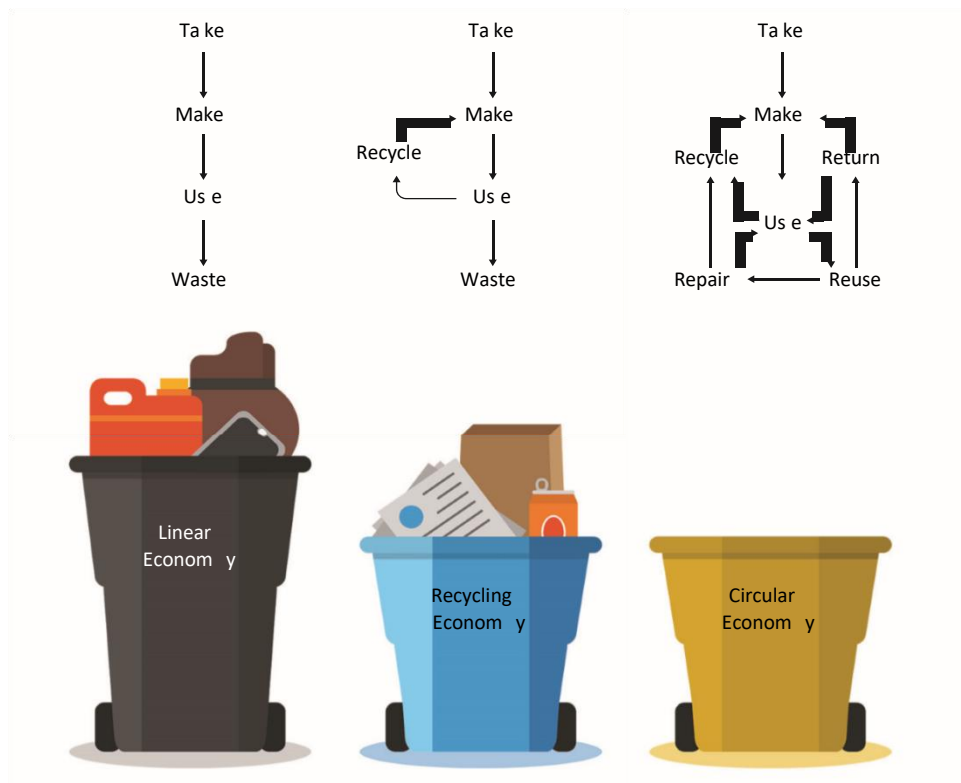
The contribution of plastic to economic growth is very high but their current production and use pattern on linear model of 'take', 'use' and 'dispose' is primary driver of natural resource depletion waste, environmental degradation, climate change and have adverse human health effects. Globally, it is estimated that only 9% of 6300 Mt of plastic waste generated between 1950 and 2015 was recycled. (Plastics and the circular economy. A STAP document, June 2018)

Key Words : Circular Economy, Sustainability, Small and Medium Enterprises, Waste Management

Concept of Circular Economy, Plastics Waste and Business Nexus

The CE captures emerging policies, business models, investment foci, community behaviour on less pollutive, resource-prudent and efficient activities underpinning our global our global civilization. These concepts can be simplified to explain the differences between our current throwaway (linear) culture in Ghana, the recycling economy and the CE.

Figure 1: The Circular Economy Simplified



Source: Asian Development Bank internal training

Ghana Context of CE, Plastics Waste and Business Nexus

It is undeniable fact that plastics are world's industrial innovation used for packaging, shoes, furniture, bags, toys, automotive manufacturing, household appliances, electronic goods and agriculture in the arena of industrial ecology irrespective of its adverse effects on biodiversity, climate change, marine pollution, and chemical contamination when produced and disposed poorly in the environment. (Geyer et al., 2017)

The above global case presented is not different in Ghana that has about 12,710 tons of solid waste (plastics form over 60%) is generated daily, with 10% collected and dumped into drains and open spaces thereby creating environmental impacts like infectious diseases, land and water pollution, floods and loss of biodiversity. AMA and TMA have waste output of 1 kgs /ppd with population of 2.7 million and waste of 2,700 tons per day. 25 CE SMEs recycle 320 tons at the value of EUR 44,100 daily and pays EUR 1.15 million to waste collectors. AMA and TMA are chosen for the research due to their contribution of over 10% waste output in Ghana (Market survey of waste and CE in Ghana, 2016) The proposed solution focuses on promoting a circular economy through driving waste management market with proactive government and private measures to decrease dumping, adopt sustainable waste and practice of 5 Rs (Refuse, Reduce, Reuse, Rot, and Recycle) for service delivery and revenue generation.

Sustainability of Plastics Waste SMEs Deploying CE Strategies

Journal of Applied Knowledge and Research (JAKR)
Version v510.5281/zenodo.10503401, Dec 31, 2023

In Ghana, Plastics Waste SMEs who want to deplore CE to enhance their sustainability are required to undertake extensive business and product design processes through transitioning from linear to recycling economy. This could be done by conversion from the current linear thinking model with large set-piece infrastructure to a distributed model using the CE thinking. Furthermore, this could also be done by creating smaller circular steps closer to the waste generation, more end-of - life solutions can be rightsized due to higher resource recovery rates (from 10% moving closer to 80% recovery). CE solutions of production of plastics from alternative non-fossil fuel feed stocks; using plastics waste as a resource; redesigning plastic manufacturing processes and products to enhance longevity, re usability and waste prevention; collaboration between businesses and consumers to encourage recycling and increase the value of plastic products;; encouraging sustainable business models which promote plastic products as services and encourage sharing and leasing. Robust information platforms should also be developed to encourage circular solutions ; and adopting fiscal and regulatory measures to support the CE. (Plastics and the circular economy, A STAP document, June 2018). Specifically, on business case by case performance of CE Plastics Waste Economic, Social and Environmental case basis, they should always address the following questions:

Economic performance: How effective is your productivity and profitability ?

Environmental performance: Have you developed conservation and efficiency initiatives in order to reduce energy consumption ?

Have you develop systems to support recycling, reclaim and /or recovery of material from waste derived from your production processes ?

Social performance: Are your formal records of the hazardous and non- hazardous waste derived from your production processes ?.How would you rate the resource efficiency of your company ? Do you have employee training programs to upgrade skills or, if not, do you support your employees in attending external training or education ?

CE Plastics Waste SMEs addressing the above questions would enable them ascertain and evaluate their Current business performance ; Business processes ; Resource efficiency ; Energy efficiency ;Waste management ; Improvement measures and Overall performance enhancement (Likely /Actual) in order to facilitate effective implementation of SMEs sustainability in relation to issues and challenges, strategies, resources and competences.

References :

Geissdoerfer et al (2017). The circular economy-a new sustainability paradigm ? J Clean Prod 143:757-768 23.

Geyer et al (2017). Production, use, and fate of all plastics ever made. Science Advances, 3, DOI:10.1126/sciadv.1700782.

Prieto-Sandoval V, Jaca C, Omazabal M (2017). Circular economy: Relationship with evolution, the concept of sustainability and strategies for its implementation.

Plastics and the circular economy (June 2018). A STAP document.

Ibid, A STAP, June 2018

