

Circular (Recycling) Economy in Bangladesh: A Study

Dr. S. M. Tazuddin

Associate professor (Business Administration Dept.), Cantonment College Jashore, Dhaka, Bangladesh

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ABSTRACT

Rapid industrialization and population growth in Bangladesh have intensified waste management challenges, leading to environmental degradation and resource scarcity. This paper explores the transition from a traditional "Linear Economy" to a "Circular Economy" (Ahmed et al 2022) as a dual solution for environmental protection and economic growth. The study identifies three core principles: designing out waste, extending product lifespans, and regenerating natural systems. Analysis of local industries reveals varying levels of resource integration: Kiam Metal Industries meets 35% of its raw material demand through recycled aluminum, while Bashundhara Paper Mill and Filotex Fashion Ltd. utilize 15% and 10% waste, respectively. Furthermore, approximately 40% of discarded household waste in the country is repurposed for biogas production. The paper concludes that achieving a sustainable "Blue Economy" requires responsible production, reduced consumption, and robust policy frameworks to transform waste into a "promising industry" that creates employment and ensures environmental stability.

Keywords: recycle economy, environment, waste and pollution, industrialization, circularity.

INTRODUCTION

In today's world, rapid industrialization and a growing population have made waste management a major challenge. Mountains of waste are accumulating in dumping grounds, causing severe negative impacts on the environment. At the same time, raw materials for various industries are becoming increasingly scarce. To tackle this dual challenge, it is now the need of the hour to shift from a 'Linear Economy' (the 'take-make-dispose' model) toward a 'Circular Economy' (the 'reuse and recycle' model). This new model does not just protect the environment; it can open new horizons for economic growth by transforming waste into a valuable resource (Ahmed et al 2022). Generally, waste is considered a worthless substance that is harmful to the environment. However, in a circular economy, waste is viewed as a raw material for creating new products. The circular economy is not merely an environmental concept, but a powerful economic model. Its primary goal is to ensure the maximum utilization of resources by reintegrating waste back into the economic system (Akter et al. 2022). This philosophy is built on three fundamental principles: i) designing out waste and pollution, ii) extending the lifespan of products and materials through repeated use, and iii) regenerating natural systems. This approach completely transforms the one-way flow of the linear economy. Instead of discarding waste as a worthless element, this model transforms it into new raw materials and assets. As a result, it not only reduces production costs but also creates new employment and business opportunities. Overall, the circular economy helps build a future where economic growth and environmental sustainability work as complements to one another. For instance, it is possible to produce new plastic products from plastic waste, recover precious metals from old electronics, or produce organic fertilizer and biogas from organic waste. As a result, this not only reduces environmental pollution but also saves foreign currency by decreasing dependence on imports. This process begins with proper waste segregation and collection systems, followed by processing at recycling centers. It is a well-organized supply chain that delivers waste to industries as "raw material."

Bangladesh is a developing country where economic growth is accelerating. Alongside this growth, the volume of urban waste is also increasing. If this waste can be properly utilized, it will open new doors of possibility for the country's economy. A vast number of employment opportunities can be created in the waste collection, processing, and recycling industries. From small-scale to large-scale initiatives, the participation of local communities is possible. A crucial aspect of the circular economy is the product life cycle (Schroeder, P., et al.

2019). Products with a very short life cycle, such as plastic bottles or single-use items, must be quickly returned to the recycling chain. On the other hand, products with a long life cycle—such as furniture, electronics, or vehicles—can be used repeatedly through repair, remanufacturing, or upgrading. By properly managing both types of life cycles, the benefits of a circular economy can be maximized. A circular economy will make a country's environment more sustainable by reducing its dependency on natural resources (Brett, M. 2018)). Pollution will decrease, and it will be easier to preserve biodiversity. By reducing reliance on foreign imports for industrial raw materials and ensuring supply from domestic sources, production costs will fall, leading to greater economic stability (Yong, R. 2007). Beyond waste management, the circular economy focuses on restoring nature by lowering pressure on air, water, and soil through reduced resource consumption (Alom, M.M. 2016). For example, converting organic waste into compost boosts soil fertility, cutting chemical fertilizer use. Similarly, recycling plastic instead of dumping it reduces aquatic pollution, actively regenerating the environment. This model creates a beneficial cycle that aligns economic growth with environmental protection (Moktadir, et al. 2018).

Research Questions:

- i. What do you mean by circular (recycle) economy?
- ii. Which sectors are being developed by CE?
- iii. What are the main obstacles to the development of CE and what steps should be taken to remove them?

Objectives of the Study

The main objective of the study is to evaluate the importance of recycle economy in Bangladesh. The specific objectives of the study are as follows:

- i. To observe their effects on the climate change of recycle economy (CE);
- ii. To identify the specific problems in the CE; and
- iii. To provide some suggestions and recommendations to solve identified problems.

Methodology of the Study

The present study has been involved in collection of data both from primary and secondary sources. The study has been conducted mainly on the basis of secondary data. The primary data have been collected through personal interview of selected members. The secondary data have been obtained from various books, journals and other publications were used for collecting secondary data. Both types of data have been collected by the researcher himself.

DISCUSSION AND ANALYSIS

Circular Economy is an economic process that establishes a circular resource management and distribution structure to ensure maximum utilization, redistribution, and regeneration of resources while minimizing waste production (Chowdhury, et al. 2014). From an environmental perspective, a Circular Economy is a sustainable, closed-loop economic system designed to prevent waste and pollution, reduce greenhouse gas emissions, and protect natural resources (Dulia, et al. 2021).

The Circular Economy is built on three core principles:

- a) Identifying and eliminating sources of waste and pollution;
- b) Keeping products and materials in continuous use; and
- c) Ensuring the regeneration of resources through natural systems.

Figure 1: Linear economy model

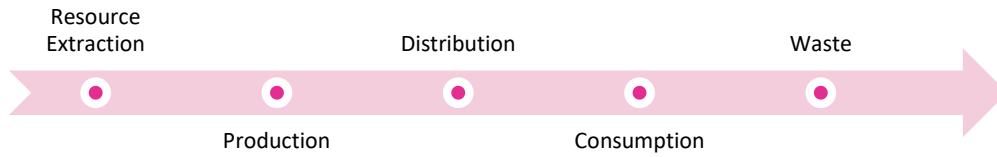
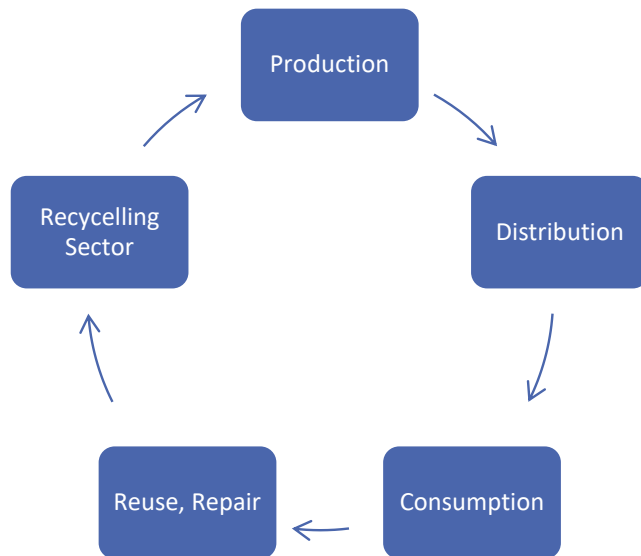


Figure 2: CE model

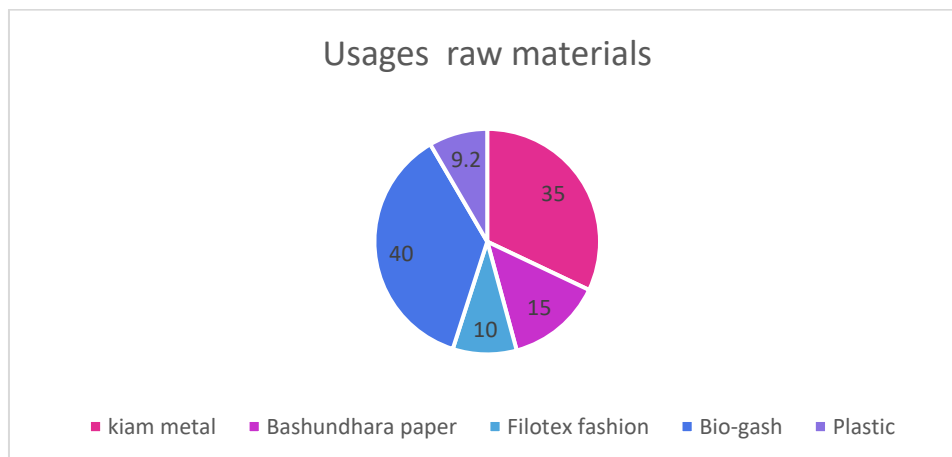


Source: Ahmed et al. (2022)

"Climate change" is currently the "talk of the world." Recycling can play a vital role in mitigating this change. This is because non-biodegradable products—such as plastic, rubber, polythene, bottles, and e-waste—are being used excessively, contributing directly and indirectly to climate change (Alam, G.J. 2009). Additionally, proper waste management is essential for keeping a country clean. The knee-deep water seen in cities after even light rain is largely caused by dumping waste into drains and sewers (Yong, R. 2007).

Figure- 3 exposes that Kiam Metal Industries meets 35% of its raw material demand by using discarded electrical aluminum as raw material, which is a unique example of a recycling economy. Figure- 3 reveal that Bashundhara Paper Mill uses 15% waste as raw material for producing some of its papers. Additionally figure- 3 show, Filotex fashion Ltd. uses 10% waste as raw material.

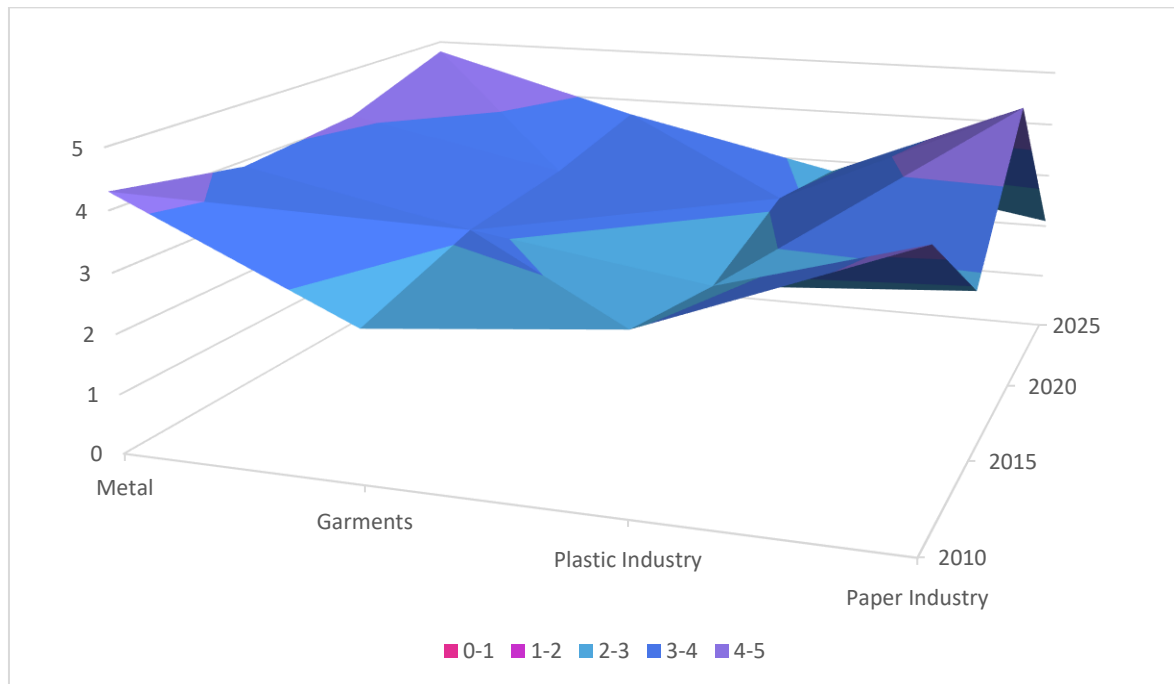
Figure 3: Usages raw materials



Source: Field Study

On the other hand figure -3 depict, in Bangladesh 40% of discarded household and 9.2% plastic is used as raw material for producing Bio-gas.

Figure 4: Recycling trends and category



Source: Field Study

KIAM Ltd is the first company in Bangladesh working in the Circular economy on concept.

Figure-4 show the 4.8% is obtained through recycling of KIAM product. The Bashundhara paper mill of Bangladesh uses 3.8% or less recycled fibers in the total furnish, though the private factories use a significant portion of recycled fibers with virgin fibers. Only 4.2% plastic wastes of Bangladesh are recycled every year. The collection of plastic waste can help to reduce pollution and save a significant amount of money in foreign exchange (Moazzem, K.G. 2016). 4.5% Collection of garments wastes and reverse resources are trying to build market place. Filotex Ltd is the first company in Bangladesh working in the Circular fashion concept.

Proposal

i) Responsible Production: To achieve a circular economy, responsible production is crucial. Alongside prioritizing maximum profit, products must be designed to be more sustainable, easily recyclable, and harmless to nature. National and international planning and policy-making are essential to realizing a circular economy.

ii) Reducing New Product Consumption: Reducing the use of new products means being conscious of avoiding consumption beyond one's needs. It involves focusing on more responsible purchasing habits. When deciding to buy a product, one must ensure whether it is truly necessary.

CONCLUSION

Geographically, Bangladesh is situated in a lower riparian (lower stream) region. Consequently, the country must tackle various natural disasters every year, including floods, droughts, tsunamis, and river erosion. The study concludes that transitioning from a traditional "Linear Economy" to a "Circular Economy" is a vital dual solution for environmental protection and economic growth in Bangladesh. By treating waste as a valuable raw material rather than a worthless substance, the country can achieve a sustainable "Blue Economy" that ensures environmental stability while creating significant employment opportunities in the collection, processing, and recycling sectors. The analysis of local industries—such as Kiam Metal Industries, Bashundhara Paper Mill, and Filotex Fashion Ltd.—demonstrates the model's viability, while the repurposing of 40% of household waste for

biogas highlights the potential for resource regeneration. Ultimately, the paper suggests that achieving these goals requires robust policy frameworks, responsible production practices that prioritize sustainability over maximum profit, and a conscious reduction in the consumption of new products to transform waste into a "promising industry."

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