

Can Circularity Solve the Problem?

Industrialization arrived with its promise that any amount of mechanization leading to the adoption of new technology and mass production scale can solve any level of human malaise. However, over the decades, the world has become the dump yard of human greed. The Take- Make- Waste Model, promoted mainly by the developed, western world, has built global waste to such a level that the natural earth can no more absorb it by itself.

Almost two centuries of mindless production have put pressure on the natural absorption process of wilful waste. This has led to higher carbon footprints, grievous environmental injury, and dangerous imperative due to climate change. The planet faces three crises of climate change, natural and biodiversity loss, and pollution and waste. What is driving these crises- is unsustainable consumption and production practices. The civilization is at a critical crossroad where the only solution seems to be a path of circularity and sustainability.

The two-degree goal set in the Paris agreement warrants a 30% reduction in carbon emission (UN Emission Gap Report,2021). Unfortunately, nationally determined contributions (NDCs) can only generate 7.5% of the target, which leaves the world more vulnerable than ever before. China and USA lead the solid waste dumping nations. Overall, the causes for greenhouse gas emissions are attributed to material handling and poor global supply chain management practices. From the current global business practices, it is evident that resource efficiency is the missing link in meeting the de-carbonization goals.

The immediate climate crisis also demands sustainable production and consumption and a balanced lifestyle for the globe. There is a need to value what is durable, repairable, recyclable, renewable so that the human civilization can thrive within the sustainable boundary of mother earth. Researchers have focused on waste management at the point of consumption and related to hazardous climate change. There is a growing

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urgency to make LIFE (Lifestyle for Environment) the core principle behind public policy and emerging metrics of national growth.

The circular economy helps the policy planners, researchers, and educators to design and deliver ‘eco-design based’ products and services through a philosophy of ‘Waste to Wealth.’ Waste is regarded as a displaced resource, and its re-usability can make the world a safer place for our future generations. The linear economy operates on the Taking- Make- Use-Waste model and has been proven to be unsustainable.

The recycling economy has not significantly dented the unmindful production and consumption in the world. There is a growing need to build a circular economy based on Return-Re-use- Repair and Recycling. The concept of circularity emerges at the end of a specific product life cycle through continuous processing and reuse of waste generated at different stages of production and consumption. There is a need to look beyond product categories and ensure a process by which everything produced/consumed needs to be seen through a ‘circular’ economic process. The primary focus can be kept on using plastic materials, water, agriculture, electronic items, lithium batteries, vehicles, solar photo-voltaic cells, and energy transmission structures.

India’s waste management issues are more complex than other emerging economies. The unmindful practices have led to wastage of limited, finite resources leading to rapid environmental degradation. India’s annual e-waste generation has moved from 7,08 445 tons in 2017-2018 to 1,014,961 in 2019-2020. We could only dismantle and recycle 20% of the e-waste generated in 2019-2020. The sharp decrease in groundwater level is a bigger concern. This has led to artificial drought and pressure on womenfolk to travel long distances for potable water, with larger implications on shifting cultivation patterns in rural India. News on farmers’ suicide and large-scale migrations of minor landholding farmers are also fall out of the environmental problems. These broader factors need attention at the level of academicians and public policy specialists.

The idea of a circular economy can solve some of these eminent problems by decoupling economic growth from material dependency and has the potential to generate an annual economic output of \$ 4.5 trillion by the year 2030. Circularity also will open up new markets, innovations in cost-driven technology, and reduction in environmental risks. If this is the size of the opportunity, where is the challenge?

From an estimate, only 8.6% of the global economy is circular. The extraction of resources has grown threefold in the last 50 years and is likely to grow another 70% in the next 30 years. The earth cannot bear such a mindless consumption of resources,



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and we need to repurpose our production, consumption, and whole economic system towards circularity. A typical textbook circularity definition talks about ‘3Rs’ - Reduce, Reuse and Recycle. Nevertheless, the latest developments have brought a model of ‘9Rs’ – Resource efficiency, Refuse to use certain products or resources, Redesigning, Reusing, Repairing, Refurnishing, Re-manufacturing, Repurposing and Recycling.

The plastic, textiles, and electronics sectors have the highest circularity potential. The global plastic output growth has been around 9% per annum since the 1950s contributing to plastic litter in rivers and oceans. We can facilitate the reuse of plastic by eliminating its unmindful usage. The need of the hour is to develop a compelling collection of plastic material through a robust (reverse) supply chain network, the development of self-sustaining business models, and a stronger, enabling regulatory mechanism. The plastic microfiber generated from the textile industry is entering our river system. This industry is polluting more due to excessive water usage, air pollution, and greenhouse gas emissions. If the government plans for sustainable textile hubs and organizes this sector into specific zones, only we will be able to protect our water bodies.

Electronic waste is another rising concern due to the unmindful usage of electronic gadgets. It is sad to know that shiploads of electronic garbage enter India from western countries, and there is no scientific evidence on how the garbage is handled in India. The global generation of electronic garbage stands at 53.6 million metric tonnes and will reach 74 metric tonnes (MT) by 2030 though this constitutes only 7.4 % of the collectible garbage. New product design to extend product life cycle, building repair and maintenance infrastructure, and improvements in recycling methods can save the world from becoming a garbage dump yard of human greed. The use of cloud storage can build a robust business model and reduce the wastage generated from data storage equipment.

The economy-wide circularity can be enhanced through a sustainable food system. The public policy should focus on developing regenerative food production processes, increased usage of local products, diversification of agriculture and crop usage pattern, and promotion of agroforestry. Prevention of food wastage and redistribution of edible fractions are other ways to build circularity.

The Niti Ayog has set up 11 committees led by different ministries, domain experts, academicians, and industry representatives to develop comprehensive action plans in areas like end of life products, recyclable materials, waste that is currently posing a climatic challenge or has the potential to build a challenge in future that should be addressed in an integrated manner. The linear economy model of India with 2% of the world’s landmass and 4% of freshwater resources will be a constraint for India’s manufacturing sector. There is a large gap between waste generated, waste processed,



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and recycled, which poses a fundamental challenge for the Indian economy to grow in the future and adopt circularity challenges. The Indian manufacturing sector, to a large extent, is fragmented and connected to the livelihood of people and responsible for waste flows.

There is a growing demand to make the waste picking and recycling sector more lucrative- mainly plastic waste and electronic waste as a sustainable business proposition. The government has announced new Extended Producer Responsibility (EPR) guidelines on plastic packaging, building accountability on plastic usage and waste management. The market-based mechanism can help waste pickers- processors, and recyclers to accumulate waste management credits which can be linked to resource financing and other potential benefits.

The idea of circular economy is based on the same concept of a life cycle: creation, sustenance, and destruction. Currently, material waste, including plastic, fiber, and e-waste, does not follow the cycle of life phenomenon – once the process of circularity sets in, the world can see better days in the future. Research on circularity and its impact on the economy is a hotbed for management academia. One can also track the effectiveness of various policy measures like national automobile scrappage policy, EPT for plastic packaging, steel scrap recycling, national resource efficiency policy, and sectoral action plan to adopt circularity bear the potential to create new knowledge for our future generation. The writing in the all is apparent -change or perish. I would love to hear from you on your work and submissions in this area to our journal.

(Dr Tapan Kumar Panda)

Reference

Corvellec, H., Stowell, A. F., & Johansson, N. (2021). Critiques of the circular economy. *Journal of Industrial Ecology*, 26(2), 421-432.

<https://doi.org/10.1111/jiec.13187>

Iyer, E. K., Pandey, N., Lamba, P. S., & Panda, T. (2013, January). Decision variables influencing Cloud adoption by SME sector: A Conjoint Analysis Mapping. In National Conference on Business Analytics & Business Intelligence (pp. 1-7). https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Decision+Variables+Influencing+Cloud+adoption+by+SME+Sector%3A+A+Conjoint+Analysis+Mapping&btnG=



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Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: the concept and its limitations. *Ecological economics*, 143, 37-46.

<https://doi.org/10.1016/j.ecolecon.2017.06.041>

Weiss, M., Haufe, J., Carus, M., Brandão, M., Bringezu, S., Hermann, B., & Patel, M. K. (2012). A review of the environmental impacts of biobased materials. *Journal of Industrial Ecology*, 16(s1), S169-S181.

<https://doi.org/10.1111/j.1530-9290.2012.00468.x>



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