

## CIRCULAR ECONOMY- ALEAP FOR SUSTAINABILITY

Dr. H. Rajeshwari

### ABSTRACT

Circular economy, an emerging issue is a model of production and usage aiming to reduce waste, preserve resources, and stimulate sustainable economic growth. In contrast to the traditional linear economy (make, use, dispose), a circular economy keeps resources and materials in use to the maximum extent so as to extract the maximum value from them while in use, then recovering and regenerating products and materials till the completion of their life.

A circular economy targets net zero carbon by reducing the consumption of resources and minimizing waste, which in turn reduces energy consumption and greenhouse gas emissions. It promotes the design and production of long-lasting, repairable, and recyclable products. These products require fewer resources and energy to produce, and their lifespan can be extended, reducing the need for new production and the associated emissions. Also by reusing, repairing, and recycling materials, a circular economy reduces the demand for new raw materials and the environmental impact of their extraction. This leads to lower energy consumption and fewer emissions throughout the product's lifecycle.

A government promoting circular economy encourages the sharing and rental of goods can reduce the demand for new products and minimize the associated emissions from production and disposal. It also promotes the use of sustainable and eco-friendly materials, which can have a lower environmental impact compared to traditional materials. This can contribute to lower greenhouse gas emissions from production processes. Further it supports the transition to renewable energy sources by reducing the demand for resources and energy, making it more feasible to invest in renewable energy infrastructure.

In this back ground A circular economy can promote the development of carbon sinks, such as reforestation and soil carbon sequestration, by reducing the demand for land and resources for agriculture and other industries.

### INTRODUCTION

A circular economy is a system that aims to minimize waste and emissions by using resources more efficiently and reusing, repairing, and recycling products and materials. The concept is based on three principles:

- Products and systems should be designed to prevent waste and pollution from the start, using sustainable materials and manufacturing processes.
- Keeping products and materials in use: Encouraging the use of durable, reusable, and upgradeable products to extend their lifespan and promote the sharing and rental of goods.
- Regenerating natural systems: Protecting and restoring natural ecosystems, using sustainable agriculture and forestry practices, and reducing the environmental impact of products and services

Net zero carbon refers to the balance between the amount of greenhouse gas emissions produced by human activities and the amount removed from the atmosphere by technologies such as carbon capture and storage (CCS) or by natural processes like reforestation and soil carbon sequestration. Achieving net zero carbon involves reducing emissions from various sources, including energy production, transportation, industry, and agriculture, as well as supporting the growth of carbon sinks that absorb and store carbon dioxide.

### CIRCULAR ECONOMY

Circular economy is more significant these days for several reasons. The global population is rapidly growing, which puts strain on natural resources. A circular economy helps to address the problem of resource scarcity by promoting the efficient use of resources and minimizing waste. It contributes to the mitigation of climate change by reducing greenhouse gas emissions. By reusing, repairing, and recycling materials, circular economies can significantly lower energy consumption and carbon emissions throughout a product's lifecycle.

As public awareness about environmental issues grows, there is increased demand for sustainable products and business practices. A circular economy offers a way for companies to meet this demand while also improving their environmental performance.

A circular economy can bring about significant economic benefits, such as job creation, cost savings, and the development of new industries. By transitioning to a circular economy, businesses can improve their competitiveness and contribute to overall economic growth.

Further Governments around the world are recognizing the importance of a circular economy and are implementing policies to support its development. These policies can range from incentives for recycling and waste reduction to regulations promoting sustainable production.

### **BENEFITS OF CIRCULAR ECONOMY**

The circular economy is a model that reduces waste by reusing, recovering, and recycling materials and products. It benefits businesses and industries in several ways:

1. **Cost savings:** By reusing materials and components, companies can lower their costs associated with raw materials and production. It can also lead to reduced waste disposal costs.
2. **Enhanced competitiveness:** Businesses that embrace the circular economy can differentiate themselves from competitors, capture additional value from resources, and create new opportunities in the market.
3. **Better resource management:** A circular economy reduces the dependence on finite resources and decreases the environmental impact of extracting and processing raw materials. This can lead to a more sustainable and reliable supply chain for businesses.
4. **Improved brand reputation:** Adopting circular economy principles can enhance a company's reputation as environmentally responsible and forward-thinking, which can attract investors, customers, and talented employees.
5. **Reduced risk:** By reusing materials, businesses can minimize their exposure to price volatility and supply chain disruptions associated with virgin raw materials.
6. **Increased innovation:** The circular economy promotes a continuous cycle of design, production, reuse, and recycling. This encourages businesses to develop new and innovative solutions, products, and services that are more sustainable and resource-efficient.

### **LITERATURE REVIEW**

Few pertinent research papers reviewed by the researcher is given hereunder

1. **Definition and background:** A comprehensive literature review would begin by defining the concept of a circular economy and providing its historical context. Papers by Pearce and Turner (1990) and MacArthur (2013) are often cited as seminal works in this regard.
2. **Key principles and models:** Next, the review should discuss the key principles and models of a circular economy. The Ellen MacArthur Foundation's work, the "butterfly diagram," and the 10R framework are often referenced in this context.
3. **Environmental benefits:** The review would then focus on the environmental benefits of a circular economy. Research by Kirchherr et al. (2017) and Haas et al. (2015) can be cited to discuss how circular economy practices can help reduce resource use, greenhouse gas emissions, and waste generation.
4. **Economic benefits:** Another important aspect of the literature review would be discussing the economic benefits of a circular economy. Papers like those by Accenture (2015) and McKinsey (2015) can be referenced to illustrate how circular economy initiatives can lead to cost savings, job creation, and improved economic growth.
5. **Challenges and barriers:** The review should also highlight the challenges and barriers in implementing circular economies. Works by Geissdoerfer et al. (2017), Bocken et al. (2016), and Webster (2015) can be cited to discuss issues related to consumer behavior, policy support, and technological challenges.
6. **Case studies and real-world examples:** Finally, the literature review should include examples of successful circular economy initiatives from around the world. These case studies can provide practical examples of how businesses and governments have implemented circular economy principles and achieved positive environmental, economic, and social outcomes.

### **OBJECTIVES OF THE STUDY**

The study on circular economy is based on following data

1. To understand the concepts underlying circular economy

2. To identify the ways in which individuals can promote circular economy
3. To examine the methodologies through which the governments can support circular economy
4. To highlight the companies that have implemented circular economy

### **SIGNIFICANCE OF THE STUDY**

Understanding the circular economy is essential for our times. Each individual, business, and the government needs to comprehend its importance. When creating and developing products, it is crucial to consider factors such as durability, reparability, and recyclability. This approach is designed to minimize waste and pollution at all product lifecycle stages. Central to this model is the promotion of rental and leasing systems, shared ownership, and repurposing. Furthermore, the circular economy model encourages product and material repair, refurbishment, and recycling to maximize their lifecycle. This way of doing business places importance on regenerating natural systems, including soils and ecosystems, by incorporating practices like regenerative agriculture, reforestation, and other green initiatives.

### **RESEARCH METHODOLOGY**

The present study is based on secondary data. The data is collected from various trusted websites, articles from national and international journals. The researcher uses desk research tool to analyse the data collected.

### **IMPLEMENTATION OF CIRCULAR ECONOMY – CASE EXAMPLES**

There are numerous successful examples of circular economy implementation across various industries. Here are a few:

1. Patagonia: The clothing company is known for its sustainable practices, which include repairing and recycling clothing items, using organic and recycled materials, and reducing water, energy, and chemical use in production.
2. Philips: The Dutch technology company has embraced the circular economy by designing products for reuse, refurbishment, and recycling, extending their lifespan and reducing waste. They also offer a range of energy-efficient lighting products that contribute to environmental sustainability.
3. Renault: The automaker is working towards a circular economy by incorporating recycled and reused materials into its vehicles. For example, they use recycled plastics in their cars and create new parts from used vehicles.
4. Interface: This flooring company has implemented a circular economy model by using recycled materials and designing products that can be easily disassembled and recycled. They also offer a take-back program for customers to return their old flooring for recycling.
5. Nike: The sportswear company is incorporating more sustainable materials into its products and improving the design of their shoes to make them easier to recycle. They also have a take-back program for worn-out shoes, which they turn into new products or use as athletic surfaces.
6. Closed Loop Partners: This investment firm is focused on circular economy projects, providing funding and expertise to companies and initiatives that promote resource recovery and reuse, such as recycling infrastructure and compostable packaging.

These companies demonstrate that implementing circular economy principles can lead to financial savings, improved resource management, and a stronger brand reputation, while also benefiting the environment.

### **INDIVIDUAL RESPONSIBILITY TOWARDS CIRCULAR ECONOMY**

Individuals can participate in a variety of circular economy models and initiatives. The individuals can practice the below ideas

1. Repair and reuse: Instead of throwing away broken or damaged items, individuals can repair them or find ways to reuse them. This could involve fixing appliances, refurbishing furniture, or repurposing materials for other uses.
2. Recycling: Recycling is a well-known example of the circular economy in action. Individuals can participate by properly sorting and disposing of their waste, using recycled products, and supporting recycling programs in their communities.

3. Clothing swaps and upcycling: Clothing swaps, where individuals exchange clothes they no longer wear, can help extend the lifespan of garments and reduce waste. Upcycling, or the process of turning old or unwanted items into something new and useful, is another way to participate in the circular economy on an individual level.

4. Car-sharing and bike-sharing programs: These programs allow individuals to share vehicles, reducing the demand for new cars and promoting more sustainable modes of transportation.

5. Community gardens and urban farming: These initiatives promote local food production and help reduce the environmental impact of transporting food long distances. They also provide opportunities for individuals to learn about and participate in sustainable agriculture practices.

6. Eco-friendly products and services: Supporting businesses that offer eco-friendly products and services, such as refillable containers, compostable packaging, and energy-efficient appliances, can help promote the circular economy. Consumers can choose to support businesses that operate on circular economy principles. This could include companies that use recycled materials, offer rental or leasing services, or have take-back programs for their products. This will help these businesses grow and scale up their circular economy initiatives.

7. Participation in circular economy: Individuals can become active contributors to the circular economy by educating and raising awareness about the significance of resource preservation, waste minimization, and sustainable consumption patterns. This may encompass the dissemination of information through social media outlets, attending workshops or conferences, and actively engaging in community dialogues about environmental challenges. Advocacy: Consumers can advocate for the circular economy by heightening awareness among their acquaintances, friends, and family. This can be realized via diverse means, including the use of social media, word-of-mouth, or by organizing local community events. Such actions can help develop a broad-based backing for the circular economy, eventually leading to its extensive acceptance

8. Mindful purchasing: Consumers can make conscious choices when purchasing goods and services. They can choose products that are made from sustainable materials, have a longer lifespan, and are easy to repair or recycle. This will create demand for circular economy products and services, driving companies to adopt more sustainable practices.

By participating in these models and initiatives, individuals can help promote the principles of the circular economy and contribute to a more sustainable future.

### **ROLE OF GOVERNMENT IN CIRCULAR ECONOMY**

Governments can play a vital role in supporting the transition towards a circular economy. Here are a few ways in which they can do so:

1. Legislation and regulation: Governments can introduce legislation and regulations that promote circular economy principles. For example, they could ban single-use plastics, enforce stricter waste management standards, and require companies to take responsibility for the disposal of their products.

2. Financial incentives: Governments can provide financial incentives to companies and individuals that adopt circular economy practices. This could include subsidies for renewable energy, tax breaks for businesses that invest in sustainable infrastructure, or rewards for households that reduce their waste.

3. Public procurement: Governments can use their significant purchasing power to drive demand for circular economy products and services. This could involve purchasing recycled or reused goods, favouring suppliers who use sustainable materials, and funding research into circular economy innovations.

4. Education and awareness: Governments can fund educational programs and initiatives to raise public awareness about the importance of the circular economy. This could involve incorporating circular economy principles into school curricula, hosting public lectures and workshops, or launching public awareness campaigns.

5. Cooperation and partnerships: Governments can facilitate interactions and alliances among businesses, non-governmental organizations, and other involved entities to foster innovation and expand circular economy endeavors. These could comprise orchestrating regular stakeholders gatherings, supplying financing and assistance for circular economy projects, or fabricating forums for knowledge sharing and swapping proven methods.

6. Development and research: National governing bodies can allocate resources towards furthering contentment and proficiency in circular economy. This might include financially backing academic research initiatives, assisting new undertakings that provide circular economy products and services, or investing in novel technologies that bolster register efficiency and the utilization of resources in a manner that is more sustainable and conserving.

7. Urban planning and infrastructure: Governments can use their planning and development powers to promote circular economy principles in urban design and infrastructure. This could involve prioritizing walking and cycling routes, designing buildings with circular economy principles in mind, or creating waste management systems that prioritize reuse and recycling.

The governments can help create the enabling environment needed to drive the transition towards a circular economy.

## CONCLUSION

Achieving a circular economy entails the cooperation of businesses, governments, and individuals as they focus on creating eco-friendly technologies, adopting circular business models, and promoting sustainable lifestyles. The potential benefits of a circular economy encompass reduced resource usage, diminished environmental effects, employment opportunities, and heightened economic competitiveness. By implementing a circular economy, the objective of reaching net zero carbon can be accomplished primarily by slashing the quantity of raw materials and energy expended in manufacturing goods and services, minimizing waste, and encouraging the adoption of renewable resources. In this context, both the circular economy and net zero carbon strategies are vital contributors to sustainable development and tackling the pressing issues of climate change and resource scarcity

By promoting resource efficiency, reducing waste, and supporting the development of renewable energy sources and carbon sinks, a circular economy can contribute significantly to the achievement of net zero carbon emissions.

## REFERENCES

1. Pearce, D., & Turner, R. K. (1990). *Economics of natural resources and the environment*. John Hopkins University Press.
2. MacArthur, E. (2013). *A new dinosaur: The circular economy*. Ellen MacArthur Foundation.
3. Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221-232.
4. Haas, W., K\"ohler, A., & Montgomery, S. L. (2015). *The circular economy: A user's guide*. Accenture.
5. Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The circular economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757-768.
6. Bocken, N. M. P., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 101, 15-29.
7. Webster, S. (2015). *The circular economy: an interdisciplinary exploration of the concept and application in a global context*. Routledge.