

RESEARCH

Circular practices in India

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The idea of sustainable practices in our economy is becoming more common in academics, business, and the process of making public policy. A circular economy is an unconventional business model that reduces pollution and waste and the lack of resources. This article provides a comprehensive analysis of the policies and procedures that nations such as China, Germany, Japan, Scotland, Denmark, and India have put into place. The information is gathered using Web of Science, Scopus journals, and other gray articles published by the Government of India, which broadens both the understanding of the circular concepts and the understanding that these studies have a specific focus.

Keywords: circular practices, India's circular economy, sustainability, circularity, western circular practice

1. Introduction

India has the largest population of any democracy in the world, with more than 1.4 billion people calling the country home. In the last decade, the economy has grown more connected to the global economy. At the end of the fourth quarter of 2022, Indians had spent more than 22.2 trillion rupees on goods and services (17). In today's digital society, each person uses a lot more resources than people did in the past. Waste is directly related to how much we spend; as our spending goes up, so does our waste. Waste is often not recycled adequately and hence ends up as fillers in soil and water and around the environment. In other words, depletion of natural resources and increased pollution affect the health and well-being of people. Now, India is on the cusp of major decisions and can go beyond the traditional "take, make, and discard" approach. With a young population and a growing industrial sector, the country may be able to make structural decisions that put it on a path to positive, sustainable growth that creates value. Adopting the circular economy (CE), which is meant to be renewing and regenerating the materials, could make the usage of power and renewable resources more efficient in a growth model that is powered by digital technology (2).

2. Literature review

2.1. Circular economy and practices

Circular economy (CE) is a way to grow the economy that aims to protect the environment, cut down on pollution, and support long-term growth (5). Under this idea, resources are used more efficiently and are reused and recycled as much as possible to cut down on pollution and waste. It also involves changing how industries are organized and how resources are distributed, as well as how cities are built, how the environment is protected, how technology is used, and how social welfare is run (5). The CE would suggest a substantial end to the throw-away culture. The "make, use, throw away" cycle would no longer be used as a way to manage production. Instead, a "reuse and recycle" strategy would be used. A simple way to explain what a "circular economy" is to say that it is when "your product outputs become your resourceful inputs (16)."

The CE concept was introduced by Boulding (1). He says that the country, its natural resources, and its environment should be in balance. He introduced the term "closed spaceship economy," in which the planet is considered as a closed-loop system. Stahel and Ready refer CE as an industrial economics where the main features emphasize

on circular practices. They came up with the idea of a “loop economy” where no wastage is created during the production. It is similar to the industrial techniques used for reducing waste, creating jobs in local areas, making better use of resources, and dematerializing the industrial sector. From there, the CE gains popularity among both academic experts and industry practitioners. On the other hand, consultants have recently put out a number of reports on the subject to show customers that they know about current issues. The idea of a circular business model came back 7° years later, thanks to the Ellen MacArthur Foundation and McKinsey. They co-wrote a number of important and well-known books and articles on the subject, which helped define and popularize the idea as it is now. In the last several years, many consulting companies have all written on CE (9).

3. Methodology

With an importance on literature pertaining to CE and its practices around the world, this empirical research aims to identify major practices in different developed countries. The articles included in this review were sourced from the various peer reviewed journals and other gray literature.

3.1. Circular economy around the world

Circular economy (CE) is a young and new concept which is a very popular business idea that focuses on long-term, sustainable growth, especially in the European Union and the Nordic countries. Specifically, the EU countries, along with the governments of other developed and developing countries like China, Japan, France, United Kingdom, Netherlands, Canada, Germany, and Scandinavian states, are pushing for and putting it into practice today (15). Several governments around the world have also adopted the CE principles as a way to save energy and protect important raw materials and natural resources that cannot be replaced (20).

In Denmark's CE, industrial aggregation has a significant role. Agglomeration, or industrial aggregation, is the process of many businesses coming together, most often in the form of a joint venture (JVSC) (7). The Kalundborg Denmark Eco-industrial Park served as an example that was carried out in Denmark and highlighted the benefits of industrial aggregation. Cement pellets that take in carbon dioxide are a great example of the “tail-to-head” model of recycling and industrial aggregation. Large construction businesses in Scotland like MacRebur are pioneering the use of pelletized recycled plastic as an alternative to bitumen and petroleum tars in the building of roads (9).

For a very long time, Germany has been one of the unquestionable leaders. Mostly legal rules, like those about landfills, incinerator emissions, and the need for producers to pack their own trash, have led to a waste management

infrastructure that is technically advanced and still makes the rest of the world green with envy (6). Trash management is a big business that pays out €40 billion and employs about 2,00,000 people in 3,000 companies (14). Waste management goals and environmental consciousness have spurred separation and recycling technology. German high-tech solutions and know-how are sought worldwide (12).

In China, the idea of circular practices was approved by the State Environmental Protection Agency (SEPA) in 2002, along with detailed criteria for how it should be built, planned, and run. The SEPA gave its approval to the concept along with guidelines for its design and plan of the industries and business and its operation. In 2004, the National Development and Reform Commission (NDRC) took charge of carrying out and promoting the plan (14).

In Japan, Steady Resource Procurement, the Cost of Waste Disposal, and New Business Model are the three major forces that directly guide the CE. Japan prioritizes resource efficiency and recycling to minimize its mineral and energy imports. To make new paper, small businesses and local governments in Japan collect used paper, especially old newspapers and magazines (8). In 2013, 80% of paper trash was collected and 64% was recycled. Recycling paper reduces virgin pulp imports and commodity price volatility. Throughout the 1970s, cities fought over municipal trash disposal. In those days, city rubbish was deposited at landfills in Tokyo Bay, causing environmental pollution and garbage truck traffic. Later, cities added garbage reduction, reuse, and recycling (3R) to incineration. In 20°years, the per capita garbage dropped from 1.6 to 0.9 tons. The Household Appliance Recycling Legislation in Japan encourages urban mining. A public-private partnership (PPP) could support waste-to-power or urban mines because they generate revenue (14).

3.2. Circular economy practice in India

In developing countries like India, where there are a lot of people, there is a lot of trash. However, only a small amount of this trash is processed by professionals, so the country cannot use all of its potential [Goyal et al. (2018)]. Although there has always been a culture of recycling and reusing in Indian families, the digital society finds it hard to practice. It is more important than ever to move toward a CE (4) because the economy is growing quickly, cities are getting more crowded, global warming is having an effect, and environmental damage is getting worse (19). India's move toward a CE could lead to huge annual benefits as well as a big drop in traffic and air pollution and have a huge improvement on the growth of the country in the long run. Our ability to use resources more efficiently, use less of those that are scarce, and motivate the creation of new business and entrepreneurial ventures will all help us get there faster (10).

TABLE 1 | Government initiatives toward circular economy (CE).

S. No	Year	Policies	Objectives
1	2014	Swachh Bharat Abhiyan (Clean India)	The objective of removing all of the trash and rubbish from the roads, sidewalks, and workplaces in the area.
2	2016	Zero Defect India	Make things that have no effect, which means they should not hurt the environment in any way.
3	2016	e-Waste Management Rules	It classified e-waste according to its multiple elements and compositions and emphasized electronic waste administration and usage techniques heavily.
4	2016	Construction and Demolition Waste Management Rules	The goal is to make as little waste as possible and get rid of it in the right way, both of which help reduce bad effects on the environment.
5	2019	Metals Recycling Policy	Encourage the building of metal recycling facilities in India so that ferrous waste from different sources can be processed and reused in a planned way.
6	2022	Plastic Waste Management Rules	The Environment Ministry of the Union of India started this policy to reduce the plastic usage. Allowable plastic with the thickness of 120 microns.

Author's Preparation.

NITI Aayog is a think tank with the mission of ensuring sustained economic development via the implementation of numerous different programs (13). **Table 1** lists the initiatives and programs started by the government to transform toward the CE. In order to solve the issues that are present in the usage of trash as a resource and to provide a viewpoint on the recycling business in India, direct actions have been taken. For instance, promoting the use of slag and fly ash that is brought by the iron and steel industry in other industries saw some level of success.

Committees chaired by ministries and including officials from different Ministries of India, subject matter experts, educationalists, and industry representatives. The committee have been constituted for 11 focal areas to develop the economies toward circular practice. A detailed plan is done by the committee to transform their core areas to a CE.

4. The path that lies ahead

The CE growth path could give India around 14 lakh crores annually in 2030 and 40 lakh crores annually in 2050 as per the recent study by Ellen MacArthur Foundation (9). This is a lot more than the current economic situation in India. The Government of India is implementing smart initiatives and plans throughout all of its cities in an effort to maximize the use of its resources, reduce pollution,

and generate innumerable new possibilities for businesses. The future goal of this practice is to concentrate more on the Indian market and the participation of many different groups. This could speed up sustainable and resilient development. Improvements to the CE would make both urban and rural economies more stable. They would also help fight climate change, ensure food and water security, protect biodiversity, create jobs, and give power to people who are struggling. Net-zero will impact every element of our lives. Hence, start-ups will have many chances, including business on plant-based proteins, business to reduce greenhouse (3) gas emissions, carbon pollution to monitor electric vehicles, and integrating e-waste management in the design process to close the loop and help preserve the world.

5. Conclusion

The CE idea has gained favor as a sustainable alternative to the linear economic paradigm. Landfills in India are overflowing, and rubbish burning pollutes the air. A CE prioritizes renewable resources, recycling, and resource efficiency to reduce waste. In conclusion, India may gain from environmental protection and economic prosperity by adopting a CE. India's sustainable development and climate change mitigation goals include greenhouse gas reduction.

Author contributions

All the work in this research manuscript is original and contributed only by the corresponding author JR. Both authors contributed to the article and approved the submitted version.

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