



## IMPACT OF CIRCULAR ECONOMY ON ENVIRONMENT AND BUSINESS DEVELOPMENT

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### ABSTRACT

In the sustainability community, the term "Circular Economy" has acquired a lot of traction. It's written in plain English that business and industry leaders can understand, so they can advocate for solutions to the increasing strain on our natural resources. Among many reasons, a further reason for circular economy's increasing worldwide appeal lies in its projected \$ 1,000 billion yearly 'business potential.' To understand the significance of circular economics on business development and environment, this research work has been conducted with the help of a survey comprising of 106 respondents. The results showed a significant impact of circular economy on both business development and environment.

*Keywords: circular economy, business development, environment, economy.*

### 1. INTRODUCTION

While conventional economics emphasizes the use of new resources, circular economies focus on reusing and recycling old ones to the fullest extent feasible. The product's life cycle may be prolonged in this manner.

In reality, this means creating the least amount of trash possible. The materials that make up a product are reused or recycled when it is no longer needed. These may be put to good use again and time again, which adds value.

Instead of the take-make-consume-throw-away economic paradigm, this one is built on a circular flow of resources. This design is based on a lot of readily available, low-cost components and energy.

Planned obsolescence is also a component of this paradigm, when a product is made to have a short lifetime in order to entice customers to purchase it again.

There is increasing pressure on governments to promote, and in some instances, mandate, the adoption of circular economy concepts in order to improve resource efficiency while reducing waste. The United Nations Member States approved the Sustainable Development Goals (SDGs) in 2015, and they include a slew of interconnected objectives.

The circular economy has previously been addressed in many UNIDO programmes. A number of people work to make goods that use less resources and are easier to recycle. Others focus on recovering or safely disposing of materials at the end of a product's life cycle.

The UN Industrial Development Organization (UNIDO) promotes "industrial energy efficiency" along with the use of "renewable energy" for productive purposes through optimizing energy systems, establishing international energy management standards, and providing sustainable energy solutions to companies. Although raw materials extraction is no longer required in most economies, UNIDO programs are working to make mining safer and more ecologically friendly, such as the processing of ores and other mined minerals.

#### 1.1. The principles of circular economy

**Principle 1: "Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows."**

To increase natural capital, a circular economy encourages the flow of nutrients throughout the system and creates conditions for soil and other living systems to regenerate themselves. Rather than as a tangible commodity, utility is offered digitally or as a service wherever feasible. It promotes technology and processes that utilise renewable or higher-performing resources when they are required. Multiple threats to natural capital are addressed by the circular economy, such as (Aditya, 2017):

1. Threatened stock and variable quality of fresh water
2. Soil degradation.
3. Loss of biodiversity
4. Depletion of fish stocks and degradation of marine ecosystems.

**Principle 2: “Optimize resource yields by circulating products, components, and materials at their highest utility at all times, in both technical and biological cycles”.**

Designing for refurbishment, remanufacturing, and recycling helps keep goods, parts, and materials in circulation while also boosting the economy.

Growing yields, as in a linear system, is beneficial and necessitates continuous system upgrades. It's important to note that unlike linear systems, circular systems don't sacrifice efficiency at the expense of long-term robustness. Several resource issues are being addressed by moving toward a more circular economic system.

1. Materials consumption: If economic growth continues at the same rate as it has in the previous several decades, India's demand for resources would have tripled by 2030. Adopting the circular economy's principles may effectively stop this trend in its tracks.
2. Nutrient loss: Indian soil is deteriorating owing to nutrient loss, and this may be reversed for real benefits.

**Principle 3: “Foster system effectiveness by revealing and designing out negative externalities”.**

Land degradation, contamination of air, water, and noise, release of hazardous chemicals, and GHG emissions are all examples of negative externalities of economic activity. Because of this, a circular economy would explain the risks and possible economic effect of externalities.

### **TOWARDS CIRCULAR ECONOMY BY 3R PRINCIPLE**

In order to maintain economic development while also minimising environmental damage and resource depletion, circular consumption is critical. The 3R Principle, which is based on Reduce, Recycle, and Reuse, may help with the difficulty of putting circular consumption into reality. Mission Zero Waste may be made a reality if wastes can be converted into useful goods. The focus of this mission is trash management in 400 cities throughout the nation using only scientific methods.

#### **1.2. Benefits of circular economy**

Adopting a circular economy strategy may help organisations move away from take-make-dispose linear manufacturing and toward business models that allow products to be designed and manufactured for prolonged use, disassembly, reuse and recycling from the start. Such a shift is possible because digital technology such as sensors for monitoring, reporting on operating



parameters and running experience are becoming more popular. Digital security may also make it easier to access services and bundle them with other goods and services under performance-based agreements. Users and contracts are only starting to be integrated, according to several experts. Circular economy is no longer the exclusive domain of multinational corporations, but one that all organisations, including small and medium-sized businesses, must now consider vital for future resilience and competitive advantage due to digital push and the increase in awareness of the phrase. Organizations that utilise the circular economy to generate value have an advantage known as circular business advantage. Other than maximising the use of available resources, companies may also generate economically significant outputs, which are not waste but rather 'food' for other participants in the economy or as planned flows for the company's own operations. Rather of focusing on reducing waste, the idea aims to eliminate it entirely. To put it another way: a concept built on decades of experience by innovators such as McDonough and Braungart's cradle-to-cradle, Amory Lovin's natural capitalism, and Janine Benyus's biomimicry abandons 20th-century ideas about linear production methods and sustainability thinking based on "doing less harm" and instead embraces the idea of clean, net-positive production through circular business model design. It is intended to be healing and regenerating. This may seem like a long-term objective at this point, but with the recent introduction of the EU's Circular Economy Package and the 2017 publication of the British Standard 8001 Framework for Implementing Circular Economy Principles in Organizations, it may become standard practise soon.

When it comes to the use of natural resources, countries are notoriously wasteful, recycling just around 15% of their plastics and using more aluminium, steel, and cement than the rest of the OECD as a whole. A more radical approach to resource efficiency is required in light of the current crisis in natural resources as well as the cascading effects of waste pollution on land, air, and water. Circular thinking may provide a solution, but the amount of creative problem solving and regulation that will be needed to implement it completely upends the status quo. In the midst of Brexit talks in the UK, a clear set of standards is also required to assist jump-start collaboration regarding circular implementation across big and small organisations.

### **1.3. Circular economy in India**

Until a few decades ago, it was standard practise to reuse, repair, and repurpose old school shoes before passing them on to the next generation. In reality, recycling post-use items was the standard in India as well.

Also, with an annual growth rate of 7.4% over the past ten years, this is a trend that has all the makings of becoming a widespread occurrence throughout the country. Damage to natural and environmental resources is worrisome in light of the nation's projected growth to the fourth biggest economy in the next two decades and its likely position as the world's most populous country in the near future.

Indian development is set to choose a route that is restorative and regenerative by design at a time when the world's most industrialised nations are making deliberate efforts to switch from linear to circular economies. (Kapur-Bakshi et al., 2021)

An Indian circular economy may result in considerable yearly savings, as well as reductions in congestion and pollution, all of which would help the country's economy in the long run. With our



capacity to optimise our use of limited resources and reduce consumption, as well as the encouragement of new business models and entrepreneurial enterprises, we will accelerate our move towards self-reliance.

Toward a circular economy, the government has been developing policies and promoting initiatives. As a result, it has already announced a number of regulations regarding plastic waste management and e-waste management as well as construction and demolition waste management.

NITI Aayog, too, was established with the goal of ensuring long-term economic development. By taking direct action against waste as a resource problem, the recycling sector in India has evolved its viewpoint. Fly ash and slag from the steel industry have made progress in other industries. Additionally, NITI organised a global conference on 'Sustainable Growth via National Recycling,' worked with the EU delegation to India on a strategy paper on 'Resource Efficiency,' and four more on resource efficiency in steel, aluminium, construction and demolition, and e-waste sectors (with the Ministry of Electronics and Information Technology).

To speed up the country's shift from a linear to a circular economy, 11 committees have been formed, each led by a line ministry and including MoEFCC and NITI Aayog officials, domain experts, academics, and industry representatives. The committees are divided into 11 focus areas to help accelerate the country's transition (Annexure 1). The committees are tasked with developing detailed action plans to help the world move from a linear to a circular economy. As part of their work, they'll also install the required mechanisms to make sure their findings and suggestions are implemented correctly.

A total of 11 products/recyclable materials/wastes are being targeted because they either provide significant problems or are becoming new areas of concern that must be handled holistically.

Increasing manufacturing and shifting consumption habits will provide more jobs and raise per capita income, but the environmental consequences of this expanded output must be effectively managed and mitigated as well.. India's industrial sector and the entire economy would be constrained by a 'Take-Make-Dispose' linear economy model with just 2% of global landmass and 4% of freshwater resources. As a result, it's critical to identify and reform the industrial process' material flow and move towards a circular economy, which offers many economic and ecological advantages.

As a result of government initiatives like Make in India, the manufacturing sector in India has recovered and now accounts for up to 18 percent of the country's GDP, according to the Economic Survey of India 2017-18. The traditional 'take, make, and dispose' economic paradigm underpins most of India's manufacturing sector expansion, however this approach clashes with the country's capacity to supply and replenish limited resources. At today's economic development rate, India's resource needs would be about 15 billion tonnes by 2030, and just over 25 billion tonnes by 2050, according to the World Resources Institute. A circular economy strategy may help us decouple economic development from resource use since the demand for raw materials far exceeds the availability. (Arora et al., 2018)

Due to India's extraordinary rate of economic development and urbanisation, there is a rise in the demand for natural resources such as land, soil, water, and mining materials. We must discover more efficient methods to utilise these resources before they run out and become very scarce. Rapid



urbanisation also means more trash, which is a problem. Existing remedies such as dumping trash, burning it, and other antiquated methods simply exacerbate the issue. New generation technology and methods for sustainable resource use and waste management are thus urgently required. Encouraging creativity in the design of products for reuse, remanufacture, and recycling will result in the creation of innovative technologies and practises that reduce waste.

## 2. LITERATURE REVIEW

(Valavanidis, 2018) Several well-known commercial companies, businesses, or research groups in industrial nations have documented CE best practices in scientific literature. For the most part, these methods may be used as models for recycling and reusing resources in the same or new goods while using less energy and producing less trash. Circular Economy projects have been advanced in countries such as Germany after extensive research found new solutions and innovations in reuse. The United States, the United Kingdom, France, the Netherlands, China, Denmark, Sweden, Norway, Finland, and others. Textiles, clothes, and durable products (electricity, electronics, carpets, furniture, etc.) all offer circular economy instances that are worth examining further. Ce idea and its connection with sustainable development in both developed and developing nations are presented here. There are innovative CE solutions that help the environment, the climate, and the economy presented in this study as well. Case studies and examples of businesses who design their products to have a long useful life while also making it possible to reuse and recycle materials and components at a high economic value.

(Yaduvanshi et al., 2016) The aim of this paper is of Investigating and evaluating the inadequacies of India's existing Waste Management procedures; Examining examples of effective WM techniques and make conclusions for CE; talking about using CE as a workaround for WM's shortcomings. WM specialists were interviewed in semi-structured and unstructured ways, and secondary data was gathered from related research publications and reports for secondary analysis. As practiced in Silos, Indian WM is less successful. It takes a long time to adopt new sustainability laws and practices when we adapt CE procedures and educate/increase knowledge of successful WM techniques.

(Ekins et al., 2019) For an OECD/EC high-level expert workshop on "Managing the transition to a circular economy in regions and cities" on 5<sup>th</sup> of July of the year 2019 at the OECD Headquarters in Paris, France, this paper was produced as a background document to the session. Because of this, it provides a starting point for further thought and debate. You should not state that this background paper is representative of the European Commission, OECD or any of its member nations' official views.

(FICCI, 2018) this paper discussed the future of Circular Economy models in India and offers economic reasons for shifting the discussion from efficiency within a product lifetime to optimizing efficiency across lifecycles in this topic paper targeted at companies in India. For a Circular Economy to function, there must be a clear, focused, and methodical framework that can help set out a clear path to success. This framework must also stimulate innovation and encourage the private sector to become involved. This piece of writing aspires to make a difference in that effort.

(Fiksel et al., 2021) Many severe problems confront developing countries in the twenty-first century, including population expansion, political conflict, fast urbanisation, food and water



shortages, pollution, infectious illnesses and climate change, including India. It's critical to be resilient in this tumultuous time, whether you're in a village household, a business boardroom, or a government hall. Our argument is that in order to achieve resilience, governments must implement intelligent policies, as well as innovative social and environmental projects that can show a willingness to adapt to these new threats. India's resilient and sustainable economy may be built on the success of these first-step initiatives. Faster progress may be stimulated by developing circular economy solutions that offer new methods to use waste resources and, as a result, reduce waste. Such efforts have been proven in previous studies to decrease environmental stress and increase community resilience, all while boosting the local economy.

(Dastbaz et al., 2017) The constructed environment has a significant impact on the natural environment, and as a result, it is critical in the transition to a circular economy. There is a danger, however, that present CE research ignores the extra effects and potentials at the meso size of individual buildings since it tends to concentrate either on the macro scale, like eco-parks, or the micro scale, like manufactured goods. Circular economy research in the built environment may benefit from delving into the basic defining characteristics of a circular economy, which are explored in this article. The identification and formulation of such basic aspects begins with a thorough literature study. With our contribution, we emphasise the critical roles of multidisciplinary research and bottom-up and top-down efforts in enabling the shift to "circular buildings." An appropriate method to group existing efforts and identify lacking interdisciplinary connections has been found by tasting it against current discourse on built-environment sustainability. Circular economy study in the built environment has little theoretical underpinnings, thus this may be a useful starting point for future research.

### 3. METHODOLOGY

This research work is based on a survey methodology and comprises of survey based on relevant hypothesis to achieve the objectives of the study. A questionnaire is made which is distributed among numerous individuals. A total of 106 responses were received which were sampled and then tested on with ANOVA. The collection of data is made from Delhi, India.

#### Hypotheses:

##### Hypothesis 1:

H<sub>01</sub>: There is no significant impact of circular economy on development of business

H<sub>a1</sub>: There is a significant impact of circular economy on development of business

##### Hypothesis 2:

H<sub>02</sub>: There is no significant impact of circular economy on preventing environment

H<sub>a2</sub>: There is a significant impact of circular economy on preventing environment

### 4. RESULTS AND DISCUSSION

This section presents the responses of the respondents along with the hypothesis testing and further discusses it.

#### Demographic information:

Gender	Count	Percentage
Female	45	42.45%

<b>Male</b>	61	57.55%
<b>Total</b>	106	100.00

Based on the above-mentioned responses, there are a total of 106 respondents comprising of 45 females and 61 males.

AGE GROUP	Count	Percentage
18-25 years	26	24.53%
26-35 years	39	36.79%
35- 45 years	33	31.13%
46 and above	8	7.55%
<b>Total</b>	106	100.00

Based on the above-mentioned responses, most of the respondents are from the age group of 26-35 years and from age group of 46 and above, only 8 respondents are there.

EDUCATION	Count	Percentage
10 <sup>TH</sup> PASSED	0	0.00%
12 <sup>TH</sup> PASSED	8	7.55%
GRADUATION	53	50.00%
PG and above	45	42.45%
<b>Total</b>	106	100.00

Based on the above-mentioned responses, maximum of 53 respondents are graduate followed by 45 respondents who are post-graduated or above.

**Responses:**

Do you have proper understanding of circular economy?		
	Count	Percentage
Yes	106	100.00%
No	0	0.00%
<b>Total</b>	106	100.00

Responses of those respondents who claimed to have a proper knowledge of circular economy were considered and other responses were not included in the study.

Are you willing to invest in business following the methods of circular economy?		
	Count	Percentage
Yes	43	40.57%
No	39	36.79%
Maybe	24	22.64%
<b>Total</b>	106	100.00

As it can be seen from the above-mentioned table, most of the respondents showed a positive attitude towards investing in circular economy.

QUESTIONS/RESPONSES	Strongly Agree	Agree	Neutral	Strongly Disagree	Disagree
Circular economy helps in routing the development on right path	21	41	6	14	24

Business can capitalize on their resources value by using circular economy.	19	31	16	17	23
Using circular economy helps in building new relationship and improving performance.	46	29	1	1	29
An approach comprising of environmental friendly factors can enable the business in keeping pace with the needs of the company and also fulfilling the mandatory standards	17	34	12	18	25
With circular economy, a positive approach towards saving the environment will develop among the business	34	44	2	11	15
The old model of business has developed to consume a huge amount of raw material from natural resources and circular economy can be considered as a perfect substitute over traditional model	23	29	18	31	5
India is a developing country with huge number of natural resources and circular economy will help in preserving these resources	28	30	29	10	9
It is important for India to make circular economy a mandate that must be followed by all businesses in order to save the environment	39	29	10	8	20
The implementation of circular economy is quite simple and can be very useful in making money as well as preventing the spread of toxic material in environment	19	31	28	23	5

The responses of the respondents mention in the above table exhibits that circular economy in India is taken as a potential approach and is considered as a potential tool for development of the business as well for preventing the environment.

#### 4.1. Hypotheses testing

##### Hypothesis 1:

H<sub>01</sub>: There is no significant impact of circular economy on development of business

H<sub>a1</sub>: There is a significant impact of circular economy on development of business

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	4339.8	4	1084.95	7.437277	0.000433	2.75871
Within Groups	3647	25	145.88			
Total	7986.8	29				

The above table shows the result obtained from hypothesis testing. The value of  $p < 0.05$  which states that there is a significant impact of circular economy on development of business

##### Hypothesis 2:

H<sub>02</sub>: There is no significant impact of circular economy on preventing environment

H<sub>a2</sub>: There is a significant impact of circular economy on preventing environment



ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1642.4	4	410.6	5.347747	0.004279	2.866081
Within Groups	1535.6	20	76.78			
Total	3178	24				

The above table shows the result obtained from hypothesis testing. The value of  $p < 0.05$  which states that there is a significant impact of circular economy on preventing environment.

## 5. CONCLUSION

India's road to sustainable development is convoluted, and it needs to acquire clarity on existing practices in order to navigate it. The enthusiasm among the people for implementing circular economy can be observed. The study clears that there is a substantial amount of benefit in implementing circular economy in India. Both business development as well as environment can get benefitted positively with the use of circular economy. Many countries can be seen attaining the benefits of circular economy. On the other hand, circular economy is not just an approach but a need for bringing a positive and potential revolution in the industry.

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