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Essential Sectors for India's Efforts to Build a More Robust Circular Economy

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Abstract:

The world's population and economic growth have exploded in the last 50 years, indicating a constant need for natural resources to raise millions of people's living standards due to the current linear economic model's demand and supply curves for natural resources and waste absorption. The present circumstance necessitates a closed economy, a restorative, zero-waste economic model that maximises resource utilisation. The necessity, origin, idea, and business models of circular economy. The report examines the role of circular economy efforts in achieving SDGs. Finally, it discusses several countries' circularity programs, with a focus on India, to improve resource efficiency and reduce waste. Policy and corporate advocacy groups are presently promoting the Circular Economy. Despite its ambitious and controversial message, Circular Economy research is emerging. The paper's two main goals are to identify, discuss, and develop the growing literature's definitions, and to recommend a beginning research method for the Circular Economy. Our research demonstrates that the current Circular Economy effort focuses on the fundamental physical flows of materials and energy in production and consumption systems. The existing literature focuses on metrics, techniques, instruments, and computations. The circular economy's paradigmatic potential remains undiscovered due to unknown assumptions about values, societal structures, cultures, and underlying worldviews. To categorise and organise studies on Circular Economy, the study proposes a model. The model can assist reduce the observed imbalance and improve the Circular Economy's contribution to a more sustainable global society.

Keywords: Circular Economy, Sustainable development, waste, resources, recycling, products.

INTRODUCTION

"A model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible" is what the term "circular economy" (or "CE") means.

Circular economy is forming and is evolving swiftly, especially today when mankind is confronting multiple issues, including climate change, pandemics and environmental damage, and expanding socioeconomic inequality. Policymakers, industrialist and service providers, as well as consumers, are each implementing environmentally friendly legislation, innovating business practises, and shifting their buying behaviour into a more sustainable direction. The move to a circular economy that is also more sustainable is being made possible through the development of new technologies and innovative business structures. A circular and sustainable economy is one in which both consumption and productions are conducted in a sustainable manner. Practices that are sustainable are the result of stakeholders in the ecosystem of production and consumption adopting a mindset, acting in a manner, and behaving in a manner that is sustainable. All stakeholders, from politicians to investors to academics to teachers to consumers and the media, must be educated for economic revolution to occur.

Circular economy is an economic system that strives towards zero waste and contamination at every stage of the material lifecycle, from resource extraction through industrial transformation and on to ultimate consumers, and that applies to all ecosystems involved.

Today, India is on the cusp of having access to a wide range of possibilities and may go beyond the conventional strategy of "take, manufacture, and discard." In light of the country's youthful population and rapidly expanding industrial sector, there are structural choices that may be made by the government that will set it on a course toward development that is beneficial, regenerative, and value-creating. Within the framework of a digitally empowered paradigm of development, the implementation of the circular economy, which is intended to be restorative and regenerative in nature, might lead to a more efficient use of resources and energy.

A circular economy cuts through this clutter. 'In nature, nothing is useless' — and this seemed to embody the business itself. More landfills and damaged ecosystems are avoided by reducing the use of natural resources, recycling, and upcycling products. Every object was perceived as having some use or worth, and even those that some would deem 'useless,' it was assumed that someone else would find a use for it at some point in the future. Everyone was aware that individuals, as well as our social and economic systems, were the primary contributors to the problem of waste, and that things did not have to accumulate to the point where they are unnecessary. ‘Jugaad,’ which literally translates to "tinkering with things," is a way of looking at the world that implies people approach objects with a flexible attitude toward their usage and are open to experimenting and discovering work-arounds. This worldview is connected to the

concept of tinkering with things. The World Economic Forum projects that a global circular economy may bring material cost savings of one trillion dollars annually by 2025, with recycled e-waste alone yielding over $62.5 billion by that year. This makes businesses more productive. The circular production of cement, aluminium, steel, and plastics, as well as food, has the potential to cut 45 percent of the pollutants that are now heating up the planet. This would have significant positive effects on the environment.

Reuse economies, such as those seen in India and other nations in the Global South, are an inspiration to the West, particularly the United States. The so-called developed world has lives founded on disposability. People create substantially more garbage per capita than India does, even though recycling is limited and there is no opportunity for reusing or repairing items.

CIRCULAR ECONOMY AN INDIAN INITIATIVE

The step to making 'Aatmanirbhar Bharat' is sustainable growth. We urgently want a development paradigm that maximises resource efficiency. India must evolve towards a circular economy with a growing population, fast urbanisation, climate change, and environmental degradation.

An economical method aiming to avoid waste and the continuing use of resources, circular economy presents a new paradigm that stresses the need to take a holistic perspective of goods and processes. Circular economy ideas must be incorporated into our manufacturing processes to reduce our reliance on natural resources and improve our competitiveness.

India's adoption of a circular economy route may have a snowball effect on the economy, resulting in substantial yearly benefits and significant reductions in congestion and pollution. We will accelerate our move toward self-sufficiency if we can improve our resource efficiency, reduce our dependency on scarce resources, and encourage the formation of new business models and entrepreneurial enterprises.

This system is seen in societies that continue to practise their traditions; the people who lived in such societies recognised its bounds. It acknowledged the scarcity of essential resources, such as clean water, air, food, and energy, which are required for human survival. As a consequence of this, the civilizations in question made effective use of them. As a result of this, farmers would rotate their crops in agriculture, city people would conserve rainwater, and so on and so forth.

The onset of industrialization caused a schism, which manifested as the false belief that one has limitless resources as a result of rising levels of production. As a consequence of this, contemporary industrial societies were under the impression that they could continue to strip nature of its resources forever. Industrialized economies failed to recognise the relevance of upkeep and recycling when they produced large quantities of consumables designed for single

use. Instead, a "throw-away culture" has developed, in which individuals are unaware of the origins of the things they use or the destinations of those products after they have been discarded.

As a global economy, we have had consistent growth, which has resulted in more capital for the products that we manufacture. On the other hand, the value of human capital has only very slightly grown, and biodiversity, which is a measure of natural capital, has fallen. Therefore, our so-called "progress" has come at the expense of the natural world. Our current measures of progress, such as GDP, do not take into consideration these many sources of income. This product is not appraised; while calculating its worth, the influence that the production of a car or computer has on the surrounding environment is not taken into consideration. At point of fact, our measures are the result of a disturbance that occurred in a time when humans intuitively understood the significance of the objects being measured.

Current industrial activities are dependent on a linear system in which natural resources are extracted to construct things, which are then sold, used, and eventually discarded. These products, in their nonbiodegradable forms, find their way into ecosystems... In addition, as a result of our increased production and disposal of waste, we create by-products such as carbon dioxide and methane, both of which are harmful to natural capital.

A circular economy is an alternative to this tendency since it reduces the use of resources that are not renewable, prioritises the reuse of products wherever possible, and recycles or upcycles materials. I've done some study on mysterious instances. One organisation in Bengaluru is responsible for collecting plastic goods and clothing that have been discarded by customers. Upcycling is a process in which waste materials, such as discarded plastic, metal, or denim, are transformed into domestic decorations and then offered for sale on the internet by skilled producers. In this case, the producers are rural craftswomen. Materials that would otherwise be thrown out but still have value are recycled in a circular economy by mixing them in inventive ways to create new products.

The process of recycling used glass jars and bottles was commonplace in many Indian homes as well. Glass degrades very slowly in the presence of biological agents. A common understanding seems to be the driving force for such reuse. Someone may purchase jam or pickle in a glass bottle, and for a number of years thereafter, the bottle would be repurposed in the household by being used to store tea leaves or lentils, or even by growing plants.

It is now possible to put this concept into action on a widespread level. If a company were to consider itself a family, the challenge it would have is figuring out how to collect bottles from the homes of millions of people. Importantly, India already has a sizable labour force that is responsible for recovering bottles, tins, paper, and jars and delivering them to a wholesaler, who then sells them to a supplier, who then delivers them back to the firm so that they may be replicated. Even in modern times, vendors ride bicycles around the streets of Indian towns,

knocking on doors and pleading for people to give them their used cooking utensils or old papers to recycle. These processes are still considered to be on the periphery of the conventional economic system; nevertheless, they should be standardised in order to make them more effective, and the workers involved should be accorded a far higher level of respect and compensation.

To hasten the transition toward a circular economy in our nation, the government has been working hard to formulate new regulations and advance various programme initiatives. The organisation has in the past issued several standards, such as those that regulate the management of plastic trash, electronic waste, building and demolition waste, as well as the recycling of metals. These standards may be found on their respective websites.

Even while an increase in production and a change in consumption patterns would lead to the creation of more employment and a greater income per capita, it is imperative that the environmental implications of such a higher output be effectively controlled and reduced as much as possible. Given that India only accounts for 2% of the world's landmass and 4% of its freshwater resources, a linear economic model that is based on the concept of "Take-Make-Dispose" would place limitations on India's manufacturing sector as well as the economy of the whole nation. Therefore, it is necessary to acknowledge and change the material flow of the industrial process in order to advance toward the various economic and ecological benefits of a circular economy. The circular economy presents opportunities for economic expansion.

The majority of developed economies have not adequately assessed all of the factors that contribute to growth. Natural capital is being depleted, and negative externalities such as emissions of greenhouse gases from the sector aren't being taken into account. Consumers have the misconception that they are purchasing inexpensive items; yet, the reason these products are so inexpensive is because the cost of contaminating the air, ground, or water while producing them is not included into the price. If this were the case, our ideas about growth would fundamentally shift due to the effects it has on the environment and people's health. Even after their goods have been distributed across the supply chain, many developed economies are enacting regulations that require firms to take more responsibility for the things they manufacture. Businesses are being encouraged to consider recovering and recycling items in response to many forms of pressure, including regulation, government involvement, and customer pressure.

Sharing resources, creating things one's own, and reusing and recycling materials are the three pillars that India created in order to build a circular economy. The idea that one may lead a happy life without possessing an abundance of material possessions is deeply ingrained in India's extensive intellectual history. The traditional culture of India emphasised the need of maintaining harmony between one's own needs and reverence for nature as the ultimate origin of all things.

While it works to modernise its own circular processes, India can share this viewpoint with the rest of the globe.

However, research reveals that electronic "waste" in India travels through multiple cycles of reuse, repair, and resale, thus discarding is really frequently delayed. Electronic trash is considered to be a threat, and the primary method of dealing with it is disposal. Used electronics are gathered in large quantities and then resold in bulk to other companies in India. These items are then fixed and reconditioned before being resold. The economy of old electronics recycles so-called "waste" by creating new items from used components or by reselling used things to new businesses. This brings the total amount of recycled materials to zero.

DISCUSSION

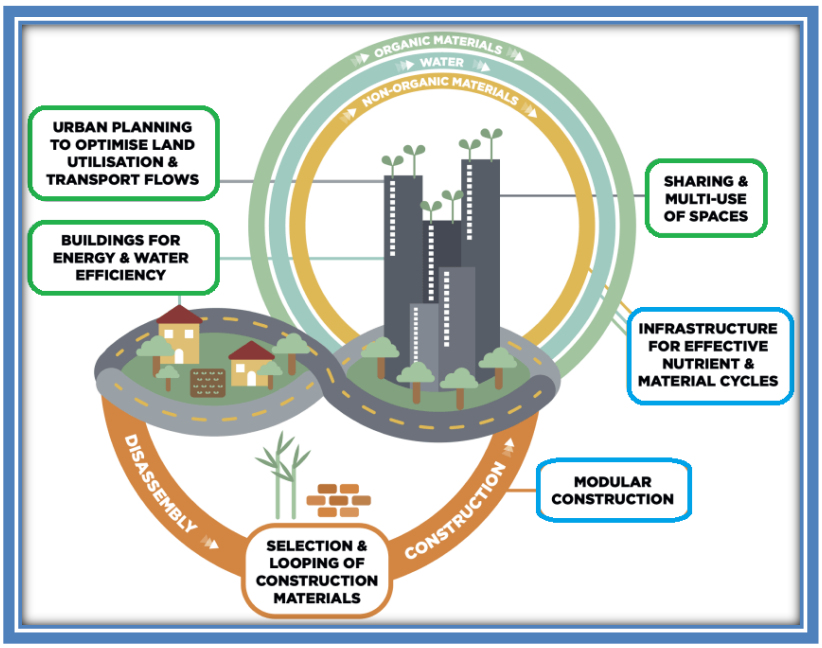
Circular Economy Opportunities

Circular economy is now widely accepted in business as a waste reduction method. Companies have strived to achieve "zero waste" by finding applications for rejected materials and completing the loop in their supply network. Circularity enhances corporate and community resilience by minimising reliance on finite resources and long-distance supply chains and saving money, and lowering the company's environmental impact. Progressive company leaders have used the notion as a cost-effective approach of strengthening organisational sustainability and resilience (Ellen MacArthur Foundation 2017). (Ellen MacArthur Foundation 2017).

4 focus areas: Cities & construction, electronics, and electrical appliances, food & agriculture, mobility & vehicle manufacturing, more than two-thirds of the average household's spending goes toward these four priority sectors, which are also predicted to expand at the fastest rate. They are the largest employer, but they also use the most resources and produce the most harmful externalities.

Cities and Construction

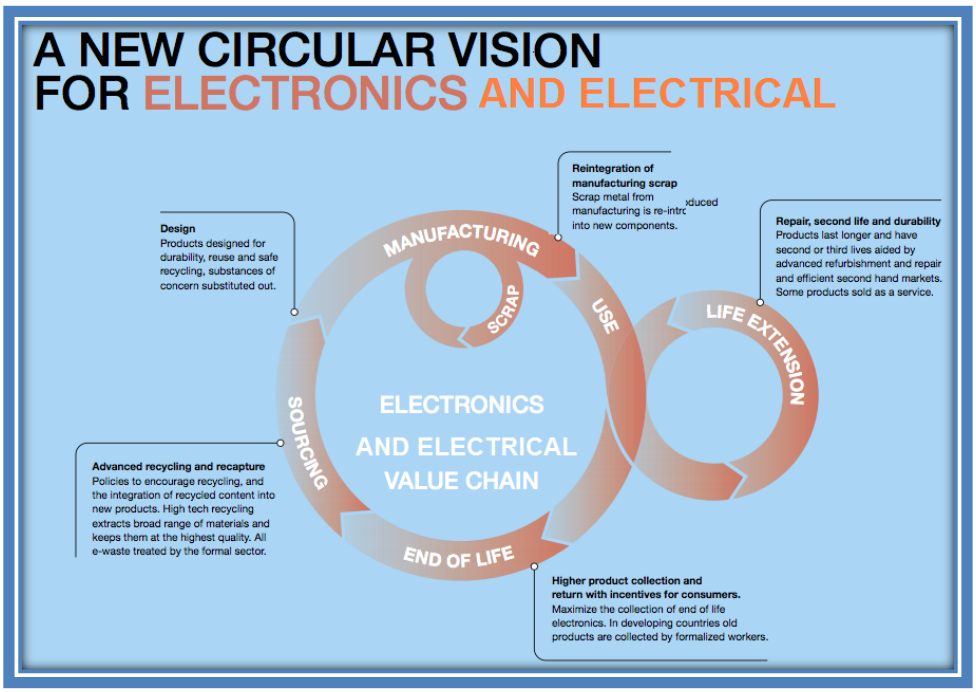
Cities that are capable of housing India's expanding population, both in terms of the built environment and the infrastructure that supports it. It is estimated that by the year 2050, approximately 60 percent of India's population will live in urban areas, which is an increase from the approximately 30 percent that live in urban areas today. Additionally, approximately 70 percent of the structures that will exist in India in the year 2030 have not yet been completed. The decisions that are made right now will have a significant impact on India's medium- to long-term development. India may be able to aid in satisfying the needs of its growing population while avoiding being mired in structures and infrastructure that are inefficient in their use of resources.



If circular economy principles were applied to the development of such a large quantity of infrastructure and building stock, it is possible that annual benefits of ₹4.9 lakh crore (US$ 76 billion) in 2050 could be realised in comparison to the path of growth that is currently being followed, in addition to environmental and social benefits.

Electronics and Electrical Appliances

A conversation on the agenda for the circular economy must include a consideration of electronic trash, commonly known as e-waste, which refers to the many different types of electric and electronic equipment. The goal of a circular economy is to eliminate all forms of waste and pollution from its operations. Instead, items, components, and materials are kept in good condition, repaired when necessary, reused wherever practical, and recycled whenever practicable.



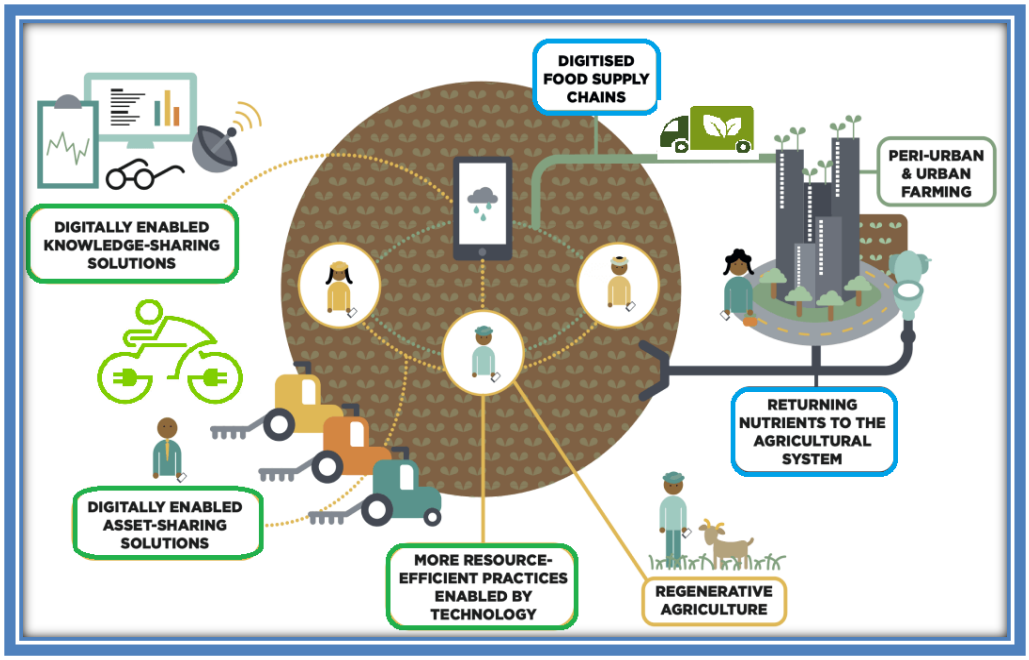
A new perspective for the manufacturing and use of electronic and electrical items is needed. The Government of India has implemented the rules to take back objectives for producers, whereby producers are obligated to collect a particular percentage of their products sold in the previous financial year. A modest 10% return objective in 2017–2018 will be increased to a 70% return target by 2023. It is simple for e-waste to be portrayed as a post-consumer concern, although the issue covers the lifespan of the gadgets everyone uses. In order to reduce waste, keep value within the system, extend the economic and physical life of an object, and its potential to be repaired, recycled and reused, everyone from designers to manufacturers to investors to traders has a critical role play. The options are infinite.

In the last two decades or more, there has been an explosion in the number of electronic devices available, and concurrently, there has been a rapid increase in the amount of electronic trash produced. This presents a significant challenge for governments, especially in less developed countries. The fact that India's law, which has been in effect for seven years, has had such a small impact is an indication of the challenges the nation has in terms of the management of electronic waste. According to this report, some of India's problems include weak regulatory design and enforcement, informal sector practises around e-waste, and a general lack of knowledge. The development of an effective electronic waste management system for the future shall absolutely need the active engagement of all of the relevant parties.

Food and agriculture

In order to fulfill India's expanding food demand, an agricultural system that blends cutting-edge technology with time-honored regenerative methods has been developed. In the United States,

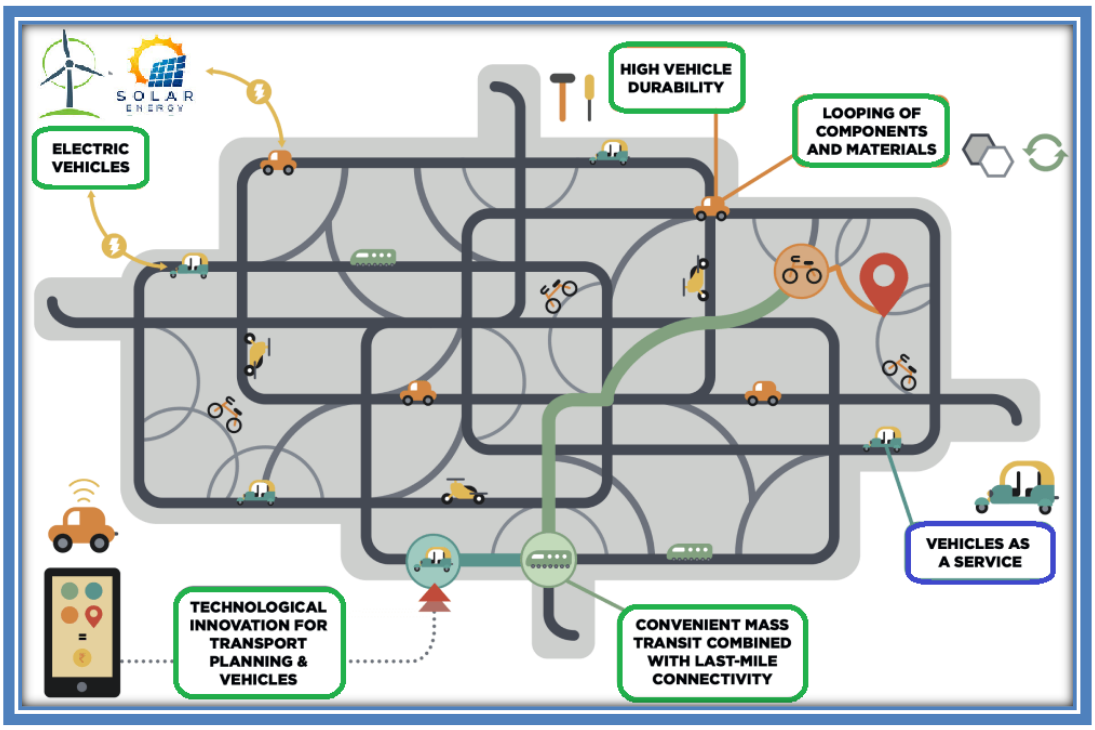
agriculture employs 50% of the working-age population and takes up 61% of the country's territory. Growing food demand and environmental difficulties connected with climate change, land degradation, and biodiversity loss are increasing strain on the system.



The implementation of concepts from the circular economy into the expansion of the food system in India may result in annual benefits of ₹3.9 lakh crore (US$ 61 billion) in 2050; it may also reduce GHG (Greenhouse gas) emissions, water use, and environmental degradation; and it may play an essential role in ensuring the continued availability of food.

Mobility and the Automotive Manufacturing Industry

Constructing a convenient, multimodal transportation system that is backed by digital technology in order to achieve mobility that is both less taxing on resources and more effective than ever before. There are now 2% of people in the population who own a vehicle. By the year 2030, the demand for personal mobility is expected to increase by x3. Mobility is essential to the expansion of the economy because it promotes individual and business efficiency and makes it possible for people to access jobs, goods, and services.



As India is creating new infrastructure to satisfy its expanding mobility demands, today's choices will define the mid-to-long-term growth of the mobility system. When compared to the existing growth environment, a circular economy development route for mobility and car production might provide yearly savings of ₹31 lakh crore (US$ 482 billion) by 2050. Applying circular economy concepts might potentially build a highly innovative and effective mobility system with decreased negative externalities.

“It's possible to integrate industrial and natural processes more generally by adopting a systems approach, which allows enterprises to benefit from vital ecosystem services like flood control, pollution absorption, and carbon (C) sequestration in terrestrial ecosystems” (Fiksel et al. 2014). Soil health is restored, water quality is improved, water supplies are more easily renewed, and nature's services improve the ecosystem as a whole. “Today, many progressive organisations are realising the need for ecosystem services to maintain the sustainability of their supply chains and are seeking resource efficiency coupled with end-of-life waste minimization, recovery, and reuse” (Fiksel 2015).

CONCLUSION

A restorative or regenerative economy is one that prioritises people, the environment, and profits in equal measure and cares about all three in the same way. This type of economy also necessitates the selection of renewable resources and the concurrent pursuit of the elimination of waste through a more pragmatic approach to the production of materials, products, and business models.

Governments labour to execute their objectives, but it is up to us to think and behave in a way that furthers this greater good.

For starters, we must devise innovative strategies for repurposing the world's finite resources while simultaneously maximising their efficiency. Therefore, in addition to creating objects with a long lifespan and extracting everything of value from them to recycle further up the value chain, we need to find alternative sources of renewable raw materials such as biomass and carbon dioxide (CO_2) itself.

Moreover, we also need renewable energy to power a genuine resource-efficient country. These steps would assist lower the carbon output by 44 percent, plus greatly decreasing congestion and pollution.

Say No to 'use and throw.'

Businesses and individuals alike might directly profit from the circular economy shift in India, which also reduces negative externalities. There are not many concepts, including the government, that are capable of establishing industrial districts with the infrastructure and safeguards necessary to advance the informal recycling industry. Instead of clamping down on the industry, working with e-waste dealers and recyclers would help establish a path forward that would minimise the hazards of recycling while not shutting down critical and skilled labour, which is deserving of our acknowledgement and respect.

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