

UTILISATION OF CURRENT RESOURCES AND THE EMERGING CONCEPT OF CIRCULAR ECONOMY: AN OVERVIEW

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INTRODUCTION

Presently under the shadow of economic and industrial development the precious reassurance of available resources is depleting at an exponential rate, resulting in evolving an unsustainable world of tomorrow. All the companies of the world have been targeting to maximize their profits. In this process of developments whether economic or social or technological, we are all contributing to the generation of 'waste' of materials resources and energy. The manufacturers of goods, the consumers of goods and other end-users, all contribute to the resource-scarcity in each and every moment of their passing life-days. Recently, a new weapon to counter this situation has been evolved in the form of what is called 'circular economy'.

RESOURCE UTILISATION AND SUSTAINABILITY

Resource utilization and sustainability are interconnected concepts that address how we manage and consume natural resources in a way that ensures their availability for present and future generations while minimizing environmental, social, and economic impacts. It involves finding a balance between meeting current needs and preserving the environment for the long term. Here are some key aspects and challenges related to resource utilization and sustainability:

- **Resource Depletion:** Many natural resources, such as fossil fuels, minerals, and forests, are finite and non-renewable. Overexploitation can lead to resource depletion, making them unavailable for future generations.
- **Renewable Resources:** Sustainable resource management emphasizes the use of renewable resources, like solar energy, wind energy, and sustainable agriculture, which can be replenished over time.
- **Biodiversity and Ecosystems:** Biodiversity is a crucial resource for ecological stability and human well-being. Unsustainable practices can lead to habitat destruction, species extinction, and disruptions in ecosystems.

- **Water Resources:** Water is a vital resource, and its overuse and pollution can have severe consequences for both ecosystems and human communities. Sustainable water management is essential to address water scarcity and quality issues.
- **Agriculture and Food Production:** Sustainable agriculture practices aim to minimize environmental impacts, conserve soil and water, and provide long-term food security.
- **Energy Sources:** Transitioning from fossil fuels to renewable and cleaner energy sources is crucial for sustainability. This shift can reduce greenhouse gas emissions and combat climate change.
- **Waste Reduction:** Reducing waste generation and promoting recycling and circular economy practices can help conserve resources and reduce environmental impacts.
- **Urban Planning and Infrastructure:** Sustainable urban development focuses on efficient land use, public transportation, green spaces, and energy-efficient buildings to create more livable and eco-friendly cities.
- **Climate Change Mitigation:** Climate change is closely linked to resource utilization and sustainability. Efforts to reduce greenhouse gas emissions and adapt to the impacts of climate change are integral to sustainability.
- **Social Equity:** Sustainability includes addressing social aspects, such as ensuring that resource management benefits all communities and addressing issues of social justice and inequality.

To achieve resource utilization and sustainability, several strategies and principles can be applied:

- **Resource Efficiency:** Use resources more efficiently by reducing waste, using advanced technology, and adopting sustainable practices.
- **Sustainable Consumption and Production:** Encourage responsible consumption patterns that consider the environmental and social impacts of products and services.

- **Conservation and Preservation:** Protect and conserve natural resources and ecosystems through protected areas and conservation efforts.
- **Renewable Energy:** Promote the development and use of renewable energy sources to reduce dependence on fossil fuels.
- **Environmental Regulations:** Implement and enforce regulations and policies that promote sustainable resource management and responsible business practices.
- **Education and Awareness:** Increase public awareness and education on the importance of sustainability and responsible resource use.
- **International Cooperation:** Collaboration among countries and regions is essential to address global resource and sustainability challenges, including climate change.

Resource utilization and sustainability are critical to ensuring a better quality of life for current and future generations while safeguarding the planet's ecosystems and natural resources. Achieving sustainability requires a shift in mindset and practices at individual, community, business, and government levels.

PROBLEM OF WASTE MANAGEMENT

The problem of waste management is a significant and growing global issue that encompasses the collection, transportation, processing, recycling, and disposal of waste materials generated by human activities. This problem poses a range of environmental, health, and social challenges:

- **Environmental Impact:** Inadequate waste management can lead to environmental pollution, such as land and water pollution, air pollution, and habitat destruction. Improper disposal of waste, especially hazardous waste, can contaminate soil and water, harming ecosystems and wildlife.
- **Health Concerns:** Poor waste management can lead to public health issues. Accumulation of waste can provide breeding grounds for disease vectors like rodents and mosquitoes. Open dumping and burning of waste can release harmful toxins into the air, affecting nearby communities.

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- **Resource Depletion:** Many valuable resources are lost when waste is not properly managed. Recycling and reusing materials reduce the need for virgin resources and can help conserve energy, water, and raw materials.
- **Landfill Overload:** The rapid generation of waste often results in the overuse of landfills. As land becomes scarcer, the cost of finding new landfill sites or managing existing ones increases. Landfills also emit greenhouse gases, contributing to climate change.
- **Illegal Dumping:** In some cases, when waste management services are lacking or expensive, individuals and businesses resort to illegal dumping, which can further exacerbate environmental problems.
- **Technological Challenges:** Some types of waste, like electronic waste (e-waste) and hazardous materials, require specialized technology and processes for safe disposal or recycling. The lack of infrastructure and regulations for these materials poses challenges.
- **Economic Costs:** Inefficient waste management can result in significant economic losses due to cleanup efforts, healthcare costs, and lost opportunities for recycling and resource recovery.
- **Socioeconomic Disparities:** Access to proper waste management services is not uniform, and marginalized communities often bear a disproportionate burden of waste-related problems, leading to environmental justice concerns.
- **Regulatory and Policy Issues:** Effective waste management requires clear regulations, policies, and enforcement. In some regions, a lack of consistent waste management policies or insufficient enforcement hampers progress.

To address the problem of waste management, various strategies can be employed:

- **Reduce, Reuse, Recycle:** Promoting a culture of reducing waste generation, reusing materials, and recycling can significantly reduce the amount of waste that needs to be managed.
- **Waste Separation:** Implementing systems for separating waste at the source can make

recycling more efficient.

- **Waste-to-Energy:** Using waste as a resource for energy production can reduce landfill use and mitigate environmental impacts.
- **Education and Awareness:** Public education campaigns can help people understand the importance of proper waste disposal and encourage responsible behavior.
- **Improved Infrastructure:** Developing better waste collection and disposal infrastructure, including recycling facilities and hazardous waste treatment plants, is essential.
- **Regulations and Enforcement:** Enforcing regulations and policies related to waste management is critical to ensure compliance.
- **Innovation and Technology:** Research and development of new waste management technologies can improve efficiency and environmental sustainability.

Addressing the problem of waste management requires a multi-faceted approach involving governments, industries, communities, and individuals working together to reduce waste generation and manage it in an environmentally responsible and sustainable manner.

CIRCULAR ECONOMY

A circular economy is an economic model that aims to minimize waste and make the most of resources. In a circular economy, the traditional linear "take-make-dispose" model of production and consumption is transformed into a closed-loop system where resources are continually reused, remanufactured, and recycled. The concept is based on the idea of regenerating and restoring products, materials, and components to extend their lifecycles and reduce the environmental and economic impact of waste.

Key principles and components of a circular economy include:

- **Design for Sustainability:** Products are designed with the intent of maximizing their longevity, durability, and reparability. Designers consider the entire lifecycle of a product, including its eventual disposal or recycling.

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- **Resource Efficiency:** Resources are used more efficiently, and waste is minimized. This involves using fewer materials and energy during production and making optimal use of resources.
- **Recovery and Recycling:** Products and materials are collected, sorted, and recycled to retain their value and utility. This includes recycling, composting, and repurposing materials.
- **Remanufacturing:** Products are remanufactured, which means they are disassembled, cleaned, repaired, and reassembled to be as good as new. This approach reduces the need for new materials and energy-intensive manufacturing.
- **Sharing and Collaborative Consumption:** Sharing platforms, like ride-sharing or equipment rental, enable more people to use a single product, reducing the overall demand for new items.
- **Extended Producer Responsibility:** Manufacturers take greater responsibility for the entire lifecycle of their products, including their disposal, recycling, and environmental impact.
- **Industrial Symbiosis:** Different industries work together to exchange waste or by-products, turning one industry's waste into another's raw materials.
- **Digital Technologies:** The use of digital technology and data can improve resource management, supply chain efficiency, and recycling processes.

The benefits of a circular economy include:

- **Reduced Environmental Impact:** By reducing waste and using resources more efficiently, a circular economy helps to minimize pollution and resource depletion.
- **Cost Savings:** Businesses can save money through reduced material costs, lower waste disposal costs, and the ability to generate revenue from recycling and remanufacturing.
- **Job Creation:** A circular economy can create new job opportunities in industries related to

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recycling, remanufacturing, and sustainable design.

- **Resilience and Security:** A circular economy reduces dependence on finite resources, making economies more resilient to supply chain disruptions and resource scarcity.
- **Innovation:** The circular economy encourages innovation in sustainable design, materials, and recycling technologies.
- **Reduced Carbon Footprint:** By reducing the need for energy-intensive manufacturing and waste disposal, a circular economy can contribute to lower greenhouse gas emissions.

The transition to a circular economy requires collaboration among businesses, governments, consumers, and other stakeholders. Policies, regulations, and incentives can play a crucial role in promoting circular practices. Companies that embrace circular principles can not only reduce their environmental impact but also improve their long-term competitiveness and sustainability.

CONCLUDING WORDS

Primarily, circular economy either eliminates waste-formation or at least it helps in minimization of waste. This becomes possible by keeping the resources always in circulation and/or recirculation. Thus, circular economy is basically a strategy of waste management. Few years back it was predicted that by 2050, the demand of resources might get tripled. Present paper made an attempt to put forth the emerging concept of the circular economy and its importance in the current economic and industrial environments of the developmental economies of the world. Under the current trends of the technological development at the global level as well as at the national level, the survival of the future of humanity would be facing a highly unsustainable world of tomorrow. Under these circumstances, the future researchers would have to evolve some means and ways to keep the current treasure of resources in-tact. For this the resources would have to be kept in circulation and recirculation by adopting the strategy of the circular economy.

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