India's Circular Revolution

This editorial is based on **Moving away from the 'take-make-dispose' model** which was published in The Hindu on 26/07/2023. It talks about the circular economy.

For Prelims: Circular Economy, Sustainable Development Goals, G-20 , Pradhan Mantri JI-VAN Yojana, GOBAR Dhan scheme, SATAT scheme, Extended Producer Responsibility

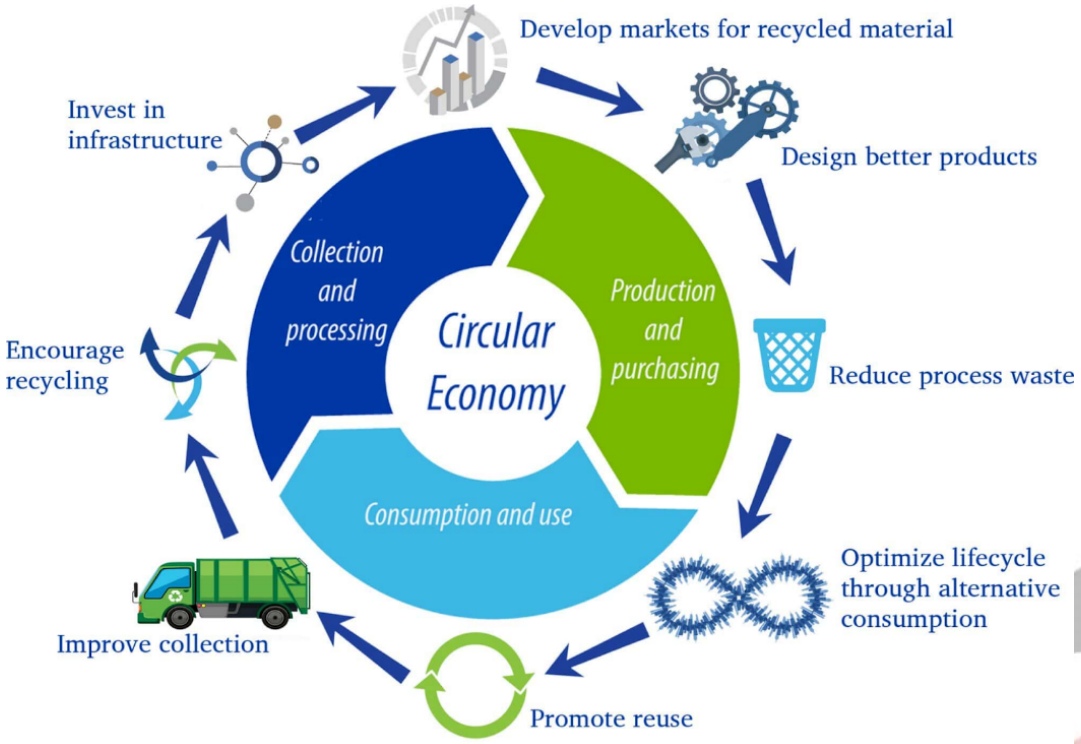
For Mains: Climate Change, Benefits of Circular Economy

Resource efficiency and circular economy are powerful strategies that can effectively minimize dependence on **natural resources, curtail waste and encourage sustainable design practices.**

In the collective global endeavour to ensure sustainable development and realize the **Sustainable Development Goals**, decoupling **resource utilization from economic growth is going to be the key.** Recognising the **need to switch from the 'take-make-dispose' to 'reduce-reuse-recycle' model,** India has prioritized 'Resource Efficiency and Circular Economy' as one of the **three core themes** for deliberations in the **G-20** forum.

India has embraced four priority areas for the circular economy during its G-20 presidency: **circularity in the steel sector;** Extended Producer Responsibility **(EPR); circular bioeconomy and establishing an industry-led resource efficiency and circular economy industry coalition.** There is now heightened recognition of resource efficiency and circular economy strategies within the G-20 community.

//



Why is Circularity in the Steel Sector Important?

- **Crucial Material for Infrastructure and Industrial Growth:**
  - Steel is a **fundamental building material** for various sectors, including construction, manufacturing, and transportation.
  - As economies grow, the **demand for steel increases**, putting additional pressure on natural resources.
- **Energy Sector Emissions:**
  - Globally, **approximately 7% of energy sector emissions** can be attributed to iron and steel production.
  - The traditional linear production model leads to higher resource consumption and emissions, **contributing to** climate change and environmental degradation.
- **Reducing Waste Generation:**
  - Circular practices **aim to minimize waste generation and promote responsible waste management** throughout the steel industry.
  - By adopting a circular economy approach, the steel sector **can significantly reduce the environmental impact** associated with **waste disposal and landfilling.**
- **Promoting Sustainable Development Goals:**
  - Circular steel practices **align with several United Nations Sustainable Development Goals (SDGs),** including **responsible consumption and production, climate action,** and partnerships for sustainable development.

What is EPR?

- EPR is a concept that holds **producers accountable for the environmental consequences** of their products from cradle to grave.
- It aims to **improve waste management** and ease the pressure on local authorities.
- It reflects environmental costs in product prices and motivates the creation of eco-friendly products.
- EPR applies to various waste streams, such as **plastic waste, e-waste, and battery waste.**
- The **E-Waste (Management and Handling) Rules, 2011** introduced EPR for the first time in India.

How can EPR Promote Circularity?

- **Encouraging Eco-Design and Sustainable Materials:**
  - To fulfil their extended responsibilities, **producers are incentivized to design products** that are **more durable, repairable, and recyclable.**
  - Eco-design principles are integrated to ensure that products have a **longer lifespan and create less waste.**
- **Resource Conservation and Waste Reduction:**
  - EPR drives producers to reduce resource consumption, as they **bear the costs associated with waste management** and end-of-life treatment of their products.
  - As a result, they are encouraged to use recycled materials and explore more sustainable production processes, reducing the demand for virgin resources.
- **Promoting Recycling Infrastructure:**
  - Producers, as part of their responsibility, often **establish and support recycling infrastructure** to ensure that their products are effectively collected, sorted, and recycled at the end of their useful life.
  - This contributes to a **closed-loop system and promotes circularity** by keeping materials in circulation.
- **Incentivizing Take-Back and Recovery Programs:**
  - EPR schemes often require producers **to set up take-back and recovery programs,** where consumers can return their used products.
  - This practice ensures that products are properly managed after use, either through **recycling, refurbishment, or safe disposal.**
- **Creating Market for Recycled Materials:**
  - As producers are responsible for managing their products' end-of-life, they are **encouraged to incorporate recycled materials back into their production processes.**
  - This, in turn, stimulates the demand for recycled materials, **supporting a circular supply chain.**
- **Government and Industry Collaboration:**
  - EPR relies on **close collaboration** between governments, industries, and other stakeholders.
  - By working together, they can develop more effective and comprehensive EPR policies, enabling a smoother transition towards a circular economy.

What are the Benefits of a Circular Bioeconomy?

- **Reduced Dependence on Fossil Fuels:**
  - A circular bioeconomy relies on renewable biological resources, such as plants, algae, and agricultural waste, to produce bio-based products and bioenergy.
  - By using these resources instead of fossil fuels, **it helps reduce greenhouse gas emissions and mitigates climate change.**
- **Resource Efficiency and Conservation:**
  - The circular bioeconomy follows the **principles of a closed-loop system**, where waste and by-products from one process become valuable resources for another.
  - This efficient use of resources **minimizes waste generation and reduces pressure on natural resources**, leading to more sustainable resource management.
- **Sustainable Agriculture and Forestry:**
  - Circular bioeconomy practices encourage sustainable agricultural and forestry practices.
  - For example, using **crop residues for bioenergy or bioproducts** helps retain organic matter in the soil, improving soil health and fertility.
- **Green Job Creation:**
  - Transitioning to a circular bioeconomy creates new job opportunities across various sectors, including **agriculture, forestry, bio-based industries, research, and waste management.**
    - It boosts rural economies and contributes to social development.
- **Innovation and Technological Advancements:**
  - The circular bioeconomy drives innovation and encourages research and development in sustainable technologies and bioprocessing methods.

        - This fosters **technological advancements that can benefit various industries.**
- **Climate Change Mitigation:**
    - Sustainable bioenergy from biomass **can help replace fossil fuels** in various applications, thereby **reducing carbon emissions and combating climate change.**
    - The Government of India has been working towards the adoption of biofuels, biogas, and bio-compost through various schemes such as **Pradhan Mantri JI-VAN Yojana**, GOBAR Dhan scheme, **SATAT scheme**, etc.
- **Enhanced Food Security:**
    - The circular bioeconomy can **contribute to improved food security by using agricultural residues and waste as feedstock for bio-based products** instead of diverting them from food production.

What are the Challenges of the Circular Economy?

- **Infrastructure and Technology:**
    - Developing and **upgrading recycling and waste management infrastructure,** as well as adopting advanced technologies for resource recovery, can be a major challenge.
- **Behavioural Change:**
    - Encouraging a shift in **consumer behaviour towards responsible consumption, product reuse, and recycling** requires effective communication and behavioural change campaigns.
- **Regulatory Framework:**
    - Ensuring effective and harmonized **policies, regulations, and incentives to support circular economy** practices across different sectors is challenging.
- **Financial Investment:**
    - Circular economy projects often **require significant upfront investments.** Attracting private and public investment to fund these initiatives can be challenging.

What Should be the Way Forward?

- **Incorporate Data and Case Studies:**
    - To provide concrete **evidence and examples, consider incorporating data and case studies** showcasing specific circular economy projects and their outcomes in India.
- **Include Challenges and Solutions:**
    - Address challenges faced during the implementation of circular economy practices in India.
    - Include **potential solutions and strategies** that the country is adopting to overcome these challenges.
- **Involve Stakeholders' Perspectives:**
    - Consider **including statements or perspectives from government officials**, industry leaders, environmental experts, and other stakeholders involved in promoting circularity in India.
    - This will add depth and authenticity to the article.
- **Concise Policy Framework:**
    - Provide a **concise overview of the policy framework and regulatory measures** that India has put in place to promote resource efficiency and circular economy.

Drishti Mains Question:

Circular economy has emerged as key solutions in collective efforts in tackling prevailing challenges. Comment

UPSC Civil Services Examination Previous Year's Question (PYQs)

Prelims:

Q. In India, 'extend producer responsibility' was introduced as an important feature in which of the following? (2019)

(a) The Bio-medical Waste (Management and Handling) Rules, 1998

(b) The Recycled Plastic (Manufacturing and Usage) Rules, 1999

(c) The e-Waste (Management and Handling) Rules, 2011

(d) The Food Safety and Standard Regulations, 2011

Ans: (c)
