

Topic

# Advancing Circular Economy in Urban Planning and Management

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## CLUSTER 1

# Introduction and Overview

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- ❖ *Conceptualisation and contextualisation of Issues*
- ❖ *Urban Planning and Management*

# Introduction

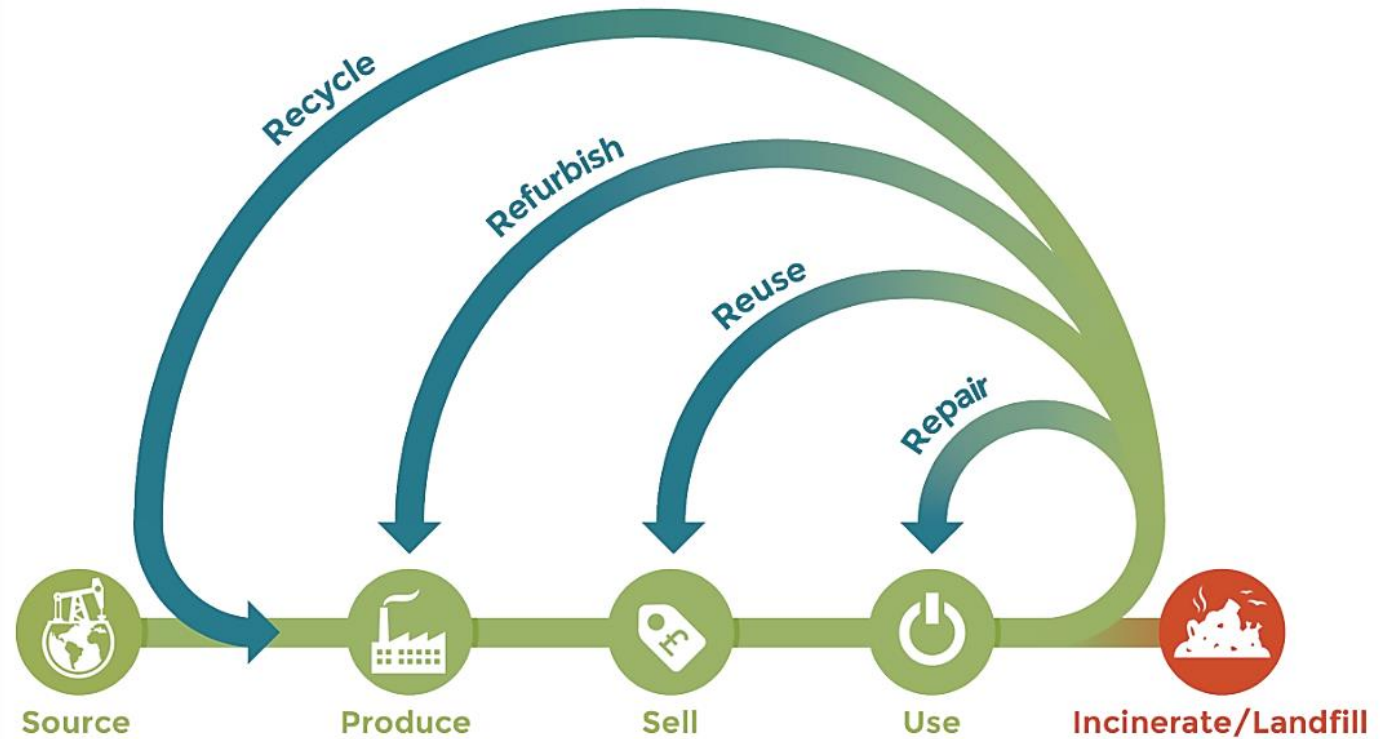
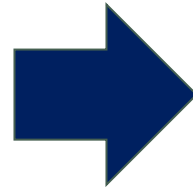
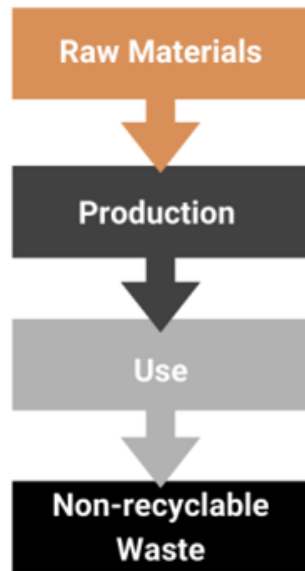
- What is Circular Economy?

Circular economy is a **concept** and **economic model** aimed at maximizing the use of resources and minimizing waste. Unlike the traditional linear economy, which follows a '***take-make-dispose***' pattern.

The circular economy aims **to keep resources in use for as long as possible**, extracting the maximum value from them, and then recovering and ***regenerating*** products and materials at the end of their service life..

# Introduction

## Linear Economy



A model of *production* and *consumption*, which involves *sharing, leasing, reusing, repairing, refurbishing and recycling* existing materials and products as long as possible.

# Introduction: conceptualizing and contextualizing

Key principles of circular economy include:

- Design for longevity and durability
- Resource efficiency and closed-loop systems
- Waste minimization and recycling
- Product-as-a-Service (PaaS) models
- Biomimicry and nature-inspired solutions
- Collaboration and stakeholder engagement



# Introduction: conceptualizing and contextualizing

Implementing the circular economy requires systemic changes in:

- Design
- production,
- consumption,
- *and waste management practices,*
- as well as supportive policies and regulations.



# Introduction: principles of physical planning

These principles provide a framework for planners to create **communities** that meet the needs of present and future generations.

- **Sustainability**
- **Equity and Social Justice**
- **Mixed Land Use**
- **Compact Development**
- **Smart Growth**
- **Resilience**
- **Participation and Engagement**
- **Environmental Protection**
- **Accessibility and Mobility**
- **Long-Term Vision and Flexibility**

## CLUSTER 2

# Integrating the circular economy into Planning and Management

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❖ *Integration Pathways*

# Integrating circular economy into planning

This involves incorporating circular economy principles into:

- the design,
- development, and
- management of urban areas.

This can include strategies such as promoting:

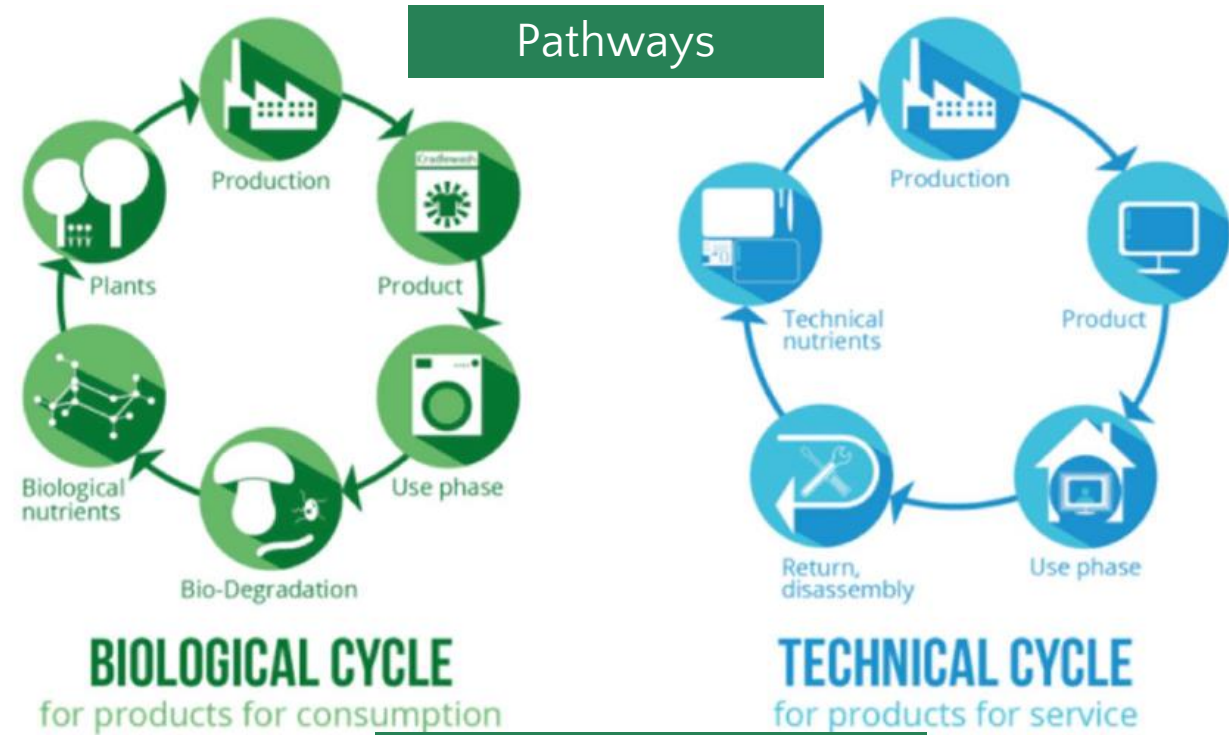
- sustainable **consumption** and **production** patterns,
- **designing** buildings and infrastructure for **longevity** and **reuse**,
- implementing **waste reduction** and **recycling** initiatives,
- and fostering collaborative consumption and sharing economies.

# Integration Pathways: sustainable consumption and production

- Refers to the production and consumption of resources in a way that meets **present needs** without compromising the ability of **future generations** to meet their own **needs** (Sustainable Development Goal 12)



- Focused on **Product Design**, **Resource Efficiency**, **Waste Recovery** and other key strategies.



Cradle 2 Cradle Design



# Integration Pathways: designing buildings for longevity

This involves prioritizing durability and longevity in building and infrastructure design to extend their lifespan and reduce the need for frequent replacements.

This includes:

- Building with **nature design** strategies
- The use of **durable, low-emissions** and **low-maintenance construction materials**.
- **Waste minimising construction practices** such as **pre-site fabrication and offsite construction**.



Prefabricated Buildings



Biophilic Design

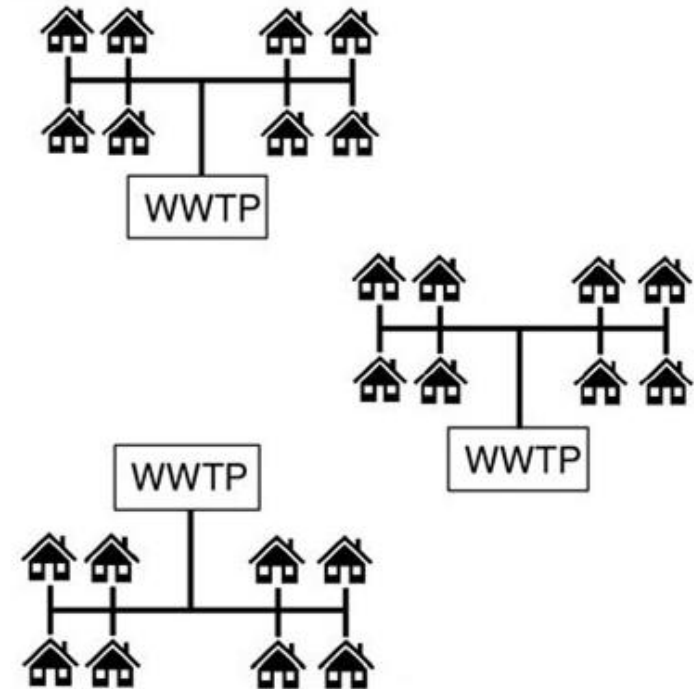


Modular Architecture

# Integration Pathways: waste reduction initiatives

- Waste is a common feature of urban areas.
- **Annually, urban areas generate about 380 billion cubic metres of municipal wastewater, a figure expected to increase by 51% by 2050.**
- Waste reduction initiatives should include infrastructure and built environments that facilitate resource recovery and closed-loop systems.

## Decentralized waste management systems



## CLUSTER 3

# Impediments to the adoption of circular economy

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- ❖ *Challenges*
- ❖ *Way forward*

# Impediments to the adoption of circular economy

- Lack of Awareness and Understanding
- High Initial Costs and Investment Requirements
- Regulatory and Policy Barriers
- Fragmented Value Chains and Lack of Collaboration

# Impediments to the adoption of circular economy

- Inertia and Resistance to Change
- Technological Limitations and Infrastructure Constraints
- Consumer Behaviour and Demand
- Limited Access to Finance and Funding

# Path to fulfilment: Addressing the impediments

- Concerted efforts from various stakeholders: *government agencies, businesses, civil society organizations, and communities.*
- Government-led interventions supporting the development of infrastructure and technology for circular economy integration.
- Education and awareness-raising campaigns, policy reforms, and incentives for circular business models



## CLUSTER 4

# Case Study

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❖ *Specific examples*

# Specific examples: wastewater treatment

## Biogas Digesters

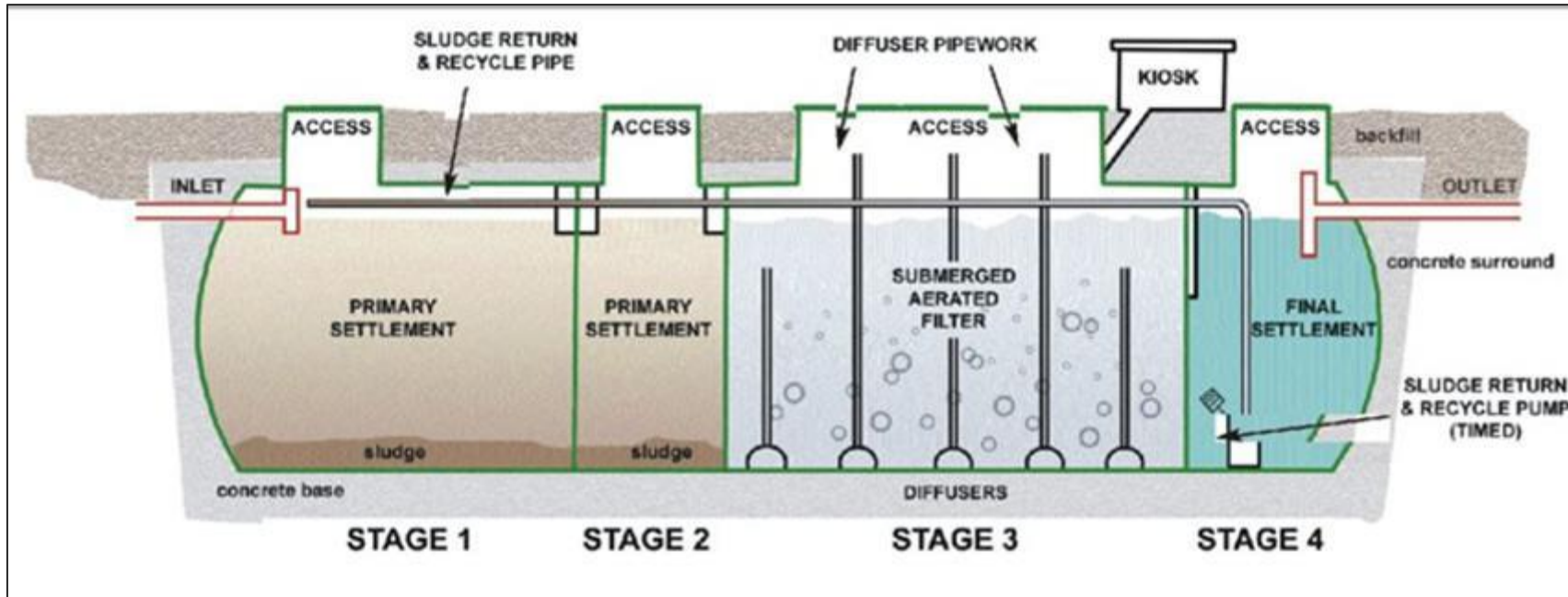
Biogas digesters, are systems that utilize microorganisms to **break down organic matter**, such as food waste, agricultural residues, and animal manure, in the absence of oxygen.

This process produces biogas, a renewable energy source primarily composed of **methane and carbon dioxide**, as well as nutrient-rich digestate that can be **used as a fertilizer**.

- Biogas digesters promote resource efficiency by *converting organic waste into valuable resources*.
- **Closed-loop systems** can be established by using the biogas produced to generate **heat and electricity**
- Biogas digesters contribute to the circular economy by converting organic waste into usable resources while minimizing environmental impacts.

# Specific examples: wastewater treatment

## Bio-digester chamber



# Specific examples: wastewater treatment

## Contemporary Layout Design

### *Integrating Biodigester Grids into Urban and Regional Planning Layout design*

- Decentralised systems
- Automated processes
- Collective ownership and management



# Conclusion

- Integrating circular economy principles in urban planning is imperative **to mitigate resource depletion, reduce waste generation, and promote sustainable resource use.**
- For low-income countries such as Nigeria, **low hanging initiatives** can be harnessed to drive the transition towards circularity within our local context.

**Q&A**



# Thank you

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