



Green Thinking REVIEW

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Promoting Innovations and Best Practices
in Sustainable Building for A Flourishing Future

Circular Construction

Even Waste Has a Future

Floreat Vita | Let Life Flourish.



Waste Is Material Without a Plan. Designing Out Waste in the Built Environment.

Construction waste often appears at the end of a process.

Cover:

A building is completed. Offcuts are cleared away. Damaged materials are removed. Surplus products are discarded. Years later, the building is altered or demolished, and valuable components disappear into mixed heaps of rubble. By then, most opportunities for recovery have already been lost.

This is why waste is not only a site-management problem. It is also a design problem.

Waste begins when buildings are conceived without considering change, repair, adaptation, disassembly, or the future value of their materials. It begins when dimensions create unnecessary offcuts, components are permanently bonded together, specifications ignore recycled or reusable materials, and demolition is treated as the only possible ending.

Circular construction asks us to plan differently.

Instead of seeing a building as a permanent object made from disposable resources, it sees the building as an evolving assembly of valuable materials and components.

Walls may be adapted.

Fixtures may be removed and reused.

Steel may be recovered.

Timber may be repaired or repurposed.

Inside this GTR:

Cover Story: Waste is Material Without Plan

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Editor's Note:

Dear Green Thinkers,

Circular Construction Begins at Design

Construction transforms materials into places where life unfolds. But it also generates enormous waste: offcuts, damaged components, surplus products and entire buildings demolished without considering what could be retained, repaired or reused. For too long, this waste has been treated as an unavoidable consequence of building.

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But what if much of it is simply material whose future was never planned?

Circular construction asks us to move beyond the familiar pattern of extract, build, use and discard. It invites us to design buildings that can be maintained, adapted, dismantled, recovered and renewed.

This changes the designer's responsibility.

We must think not only about how materials enter a building, but also about how they may leave it. Not only about completion, but about change over time. Not only about first use, but about the lives that may follow.

Circularity therefore begins long before demolition. It begins with the brief, the dimensions, the material choices, the connections, the construction methods and the foresight to plan for reuse.

In GTR 81, we explore how the built-environment industry can reduce waste, retain value and keep materials in productive use for longer.

Because what appears to be the end of usefulness may simply be the beginning of another life.

Even waste has a future.

Floreat Vita | Let Life Flourish
– The Editorial Team

Timber may be repaired or repurposed.

Bricks may serve another building. Entire spaces may change function without being destroyed.

This requires foresight.

Designers must consider standard dimensions, durable materials, accessible connections, replaceable components, adaptable layouts, and construction methods that make future recovery possible.

Contractors must reduce damage, separate waste streams, manage surplus materials, and protect components intended for reuse.

Clients and developers must look beyond the immediate cost of construction and consider the full life of the building.

Manufacturers must take responsibility for what happens to products after their first use.

Circularity does not mean that every material can be used forever. Some materials will deteriorate. Others may become contaminated or unsafe. But far more can be retained, repaired, recovered, or transformed than current construction practices allow.

The challenge is to stop treating valuable resources as though their usefulness ends when a project changes.

What we call waste is often not worthless.

It may be a door awaiting another room.

A brick awaiting another wall. A beam awaiting another span. A material awaiting another purpose.

Circular construction begins by giving that future a place in the design.

GTR Reflection

Waste is not always the end of a material's usefulness. Sometimes, it is simply the point where our planning ended too soon.

Even waste has a future.

Green Thinkers' Challenge

Choose one building project, renovation or demolition site in your community.

Ask: *What valuable materials are being discarded—and what plan could have given them another use?*

It may be a door, tile, window, brick, timber member, ceiling panel, sanitary fitting or length of steel.

The first step towards circular construction is learning to see value where others see waste.

Even waste has a future.



Even Waste Has a Future: Seven Principles for Keeping Materials in Use

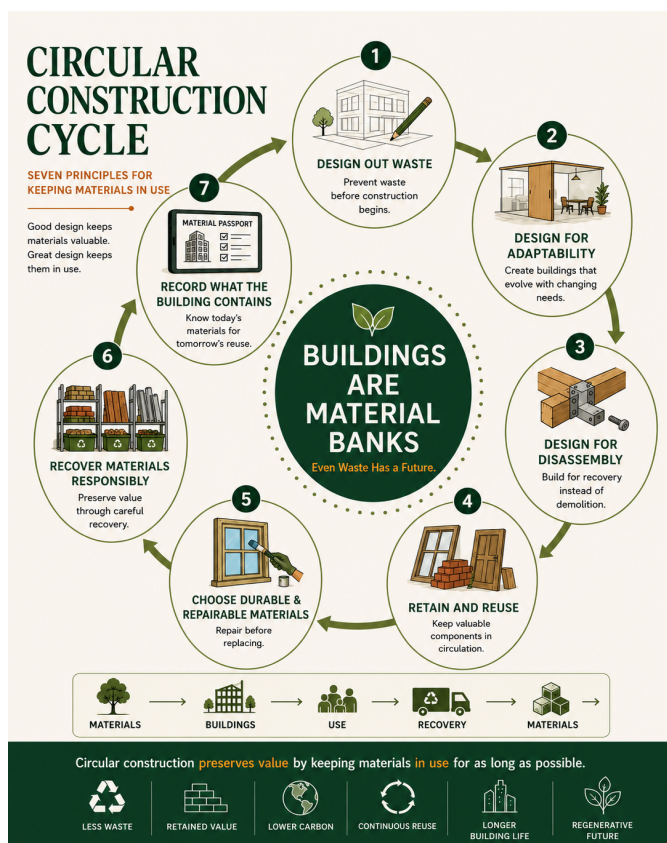
Circular construction is shaped by many decisions across a building's life. This edition highlights seven key principles that can help keep materials useful for longer and reduce waste from the outset.

- 1. Design Out Waste:** Plan dimensions, specifications and construction methods carefully to reduce offcuts, damage, over-ordering and unnecessary material use.
- 2. Design for Adaptability:** Create flexible layouts, accessible services and replaceable components so buildings can respond to changing needs without major demolition.
- 3. Design for Disassembly:** Use connections that allow components to be separated safely. Mechanical fixings, modular systems and reversible joints make future recovery easier than permanent bonding.
- 4. Retain and Reuse:** Before demolishing or replacing, ask what can remain. Existing structures, doors, fittings, bricks, timber and other components may still have considerable value.
- 5. Choose Durable and Repairable Materials:** Materials should withstand use, be maintainable and allow damaged parts to be repaired or replaced without discarding an entire system.
- 6. Recover Materials Responsibly:** When reuse in place is impossible, components should be carefully dismantled, sorted and directed

towards reuse, remanufacture or recycling rather than mixed disposal.

7. Record What the Building Contains:

Material inventories and digital material passports can document what was used, where it is located, and how it may eventually be recovered.



Green Thinking Insight

Circular construction does not begin when a building is demolished.

It begins when the brief is written, the details are drawn, the materials are selected and the connections are designed.

The future of every material is shaped by decisions made today.

Even waste has a future.

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Designing Out Waste Requires Shared Responsibility

1. Architects & Designers

Plan for the building's whole life, not only its completion. Coordinate dimensions, reduce unnecessary material variety, design adaptable spaces, specify durable products and use connections that allow components to be repaired, replaced or recovered.

2. Clients, Developers & Property Owners

Include circularity in the project brief and budget from the beginning. Prioritise retention, refurbishment and adaptation before demolition. Consider long-term value, maintenance, future change and material recovery—not only initial construction cost.

3. Contractors & Site Managers

Treat materials as valuable resources rather than disposable supplies. Improve ordering accuracy, protect materials from damage, separate waste streams, store reusable components carefully and find productive uses for surplus materials.

4. Manufacturers & Suppliers

Design products for durability, repair, disassembly and recovery. Provide clear information about material content, maintenance and end-of-use options. Take-back schemes can help return products and components to useful cycles.

5. Governments & Industry Bodies

Create policies and standards that reward reuse, renovation, material recovery and responsible demolition. Improve construction-waste data, support markets for recovered materials and discourage avoidable disposal.

Green Thinkers' Takeaway

*Circular construction is not merely about finding uses for waste. It is about ensuring that buildings, components and materials are **never designed without a future.***

Resources for Further Study

Learn More. Think in Cycles. Build for the Future.

READ 📖 The Circular Built Environment Playbook: World Green Building Council
A practical guide to circular and regenerative principles across the building and construction value chain. **Link:** worldgbc.org/article/circular-built-environment-playbook/

👉 **Circular Buildings Toolkit.** Ellen MacArthur Foundation and Arup
A useful project tool for incorporating adaptability, material reuse, disassembly and lifecycle thinking into building decisions. **Link:** ellenmacarthurfoundation.org/articles/circular-buildings-toolkit

EXPLORE 📖 **Circular Economy in Africa: Built Environment:** Ellen MacArthur Foundation Explores African opportunities for applying circular principles throughout building design, construction, use and deconstruction. **Link:** ellenmacarthurfoundation.org/circular-economy-in-africa-built-environment

👉 **Level(s): A Common Language for Sustainable Buildings.** European Commission - A lifecycle framework covering materials, carbon, water, health, comfort and circularity in buildings. **Link:** green-forum.ec.europa.eu/green-business/levels_en

THINK DEEPER 📖 **Designing Buildings in the Context of the Circular Economy** European Commission - Introduces circular design principles for durability, adaptability, waste reduction and resource recovery. **Link:** single-market-economy.ec.europa.eu/publications/designing-buildings-context-circular-economy_en



Nigeria: Primetech Office Building - Designing Waste Out from the Start



Primetech Office Building Abuja, Nigeria. Image Credit: www.usgbc.org

The Primetech Office Building in Nigeria shows that circular construction can begin with disciplined design rather than dramatic technology.

Developed by Primetech Design and Engineering Nigeria, part of the Julius Berger Group, the project was built on a brownfield industrial site with resource efficiency embedded in its design and construction process.

A key decision was to align the building grid with standard material dimensions. This reduced unnecessary cutting, offcuts and avoidable waste. The project also prioritised locally available materials, recycled content and recyclable products where possible.

During construction, waste was separated into designated streams so that materials could retain value and be directed towards reuse or recycling instead of mixed disposal.

These measures reveal a central lesson of circular construction: waste reduction begins before materials arrive on site.

It begins when designers coordinate dimensions, specifications consider material content and future recovery, contractors protect materials from contamination and damage, and waste streams are kept separate.

The project's influence extended beyond the building itself. Designing to minimise or eliminate construction waste became a core value informing other Primetech projects.

For Nigeria's construction sector, the lesson is practical: circularity can begin now through better planning, coordination, handling and accountability across the project lifecycle.

Green Thinking Insights

Waste, Materials and Circular Responsibility

The most effective waste strategy is not better disposal. It is preventing waste from being created.

A building is not only a finished object. It is also a temporary assembly of materials with futures beyond their first use.

Adaptability extends the life of buildings. Buildings that can change without major demolition retain more value and create less waste.

Disassembly should be considered at the design stage. How components are joined today determines whether they can be recovered tomorrow.

Durability is part of circularity. Materials that last, can be maintained and can be repaired reduce the need for premature replacement.

The future of waste is decided long before the waste bin appears.

Green Thinking Tip

Waste is easiest to prevent when it is addressed on the drawing board—not only in the site bin.

Even Waste Has a Future



2040: When Buildings Were Designed for Another Life

By 2040, buildings were no longer designed as permanent objects with disposable parts.

They were designed to change.

Walls could be moved without destruction. Floors could take new uses. Services could be upgraded without tearing buildings apart. Doors, windows, panels, beams and fittings carried identities that revealed what they were made of, where they came from and how they could be recovered.

When a building no longer served its original purpose, demolition was no longer the automatic response.

It was adapted.

A school became a health centre.

An office became housing.

A warehouse became a market.

A roof structure found another span.

Bricks from one building became the walls of another.

Construction sites began to resemble places of careful exchange rather than endings. Components were dismantled, inspected, repaired and returned to use. Materials were no longer treated as possessions to be consumed once, but as resources temporarily entrusted to each project.

Cities became repositories of future possibilities.

This change did not happen because waste suddenly became valuable. It happened because designers, clients, manufacturers, contractors and policymakers began planning for value before waste appeared.

Every joint, dimension, specification and material choice carried a question:

What life could follow this one?

The buildings of 2040 were not only designed to last. They were designed to adapt, separate, travel, return and begin again.



A Question for Today:

If every building had to have a second life, how would you design the first one?

GTR Closing Reflection:

*A circular building does not wait for the future of its materials to be decided. It designs that future from the start. **Even waste has a future.***

Floreat Vita | Let Life Flourish.



Green Thinking REVIEW

Green Revolution in Sustainable Building:
Promoting Innovations & Best Practices



The Circular City

A circular built environment keeps buildings in service, materials in use, and value in circulation.

Even Waste Has a Future.

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GTR
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Think Differently. Design Intentionally. Build Responsibly.

