

Launch: System enablers for a circular economy

January 31st 2023

ANZ Programme Partners:



Project Partners:



Agenda

Welcome

Report overview

Speakers

Panel discussion

Close

UKGBC Team



Kai Liebetanz
Senior Advisor –
Circular Economy



Clare Wilde
Project Coordinator –
Circular Economy



Brooke Penman
Climate Action
Marketing and
Communications
Manager



Yetunde Abdul
Head of Climate Action

Polls

Please answer by clicking on the screen once the box appears

Our Mission *To radically improve the sustainability of the built environment, by transforming the way it is planned, designed, constructed, maintained and operated.*



DEVELOPERS, OWNERS & OCCUPIERS



FINANCIAL BODIES AND INVESTORS



CONTRACTORS



700+ members
and growing



SUPPLIERS

ADVISORS

GOVERNMENT, AGENCIES & ACADEMIA



WE COLLABORATE by convening diverse built environment organisations to engage in a common purpose

WE ADVOCATE by calling for ambitious commitments, stronger standards and progressive policy

WE ENABLE by developing guidance, showcasing solutions and stimulating innovation

WE INSPIRE by sharing knowledge and best practice, and encouraging transformational leadership



A thank you to our Partners...



Programme Partners



Project Partners



Project Supporters





System enablers for a circular economy

The objective

This project will identify the main **barriers for a systemic shift** from a linear to a circular economy in the construction sector and highlight the **decision points** and **industry needs** required for making this shift.

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- Big picture thinking and vision for the built environment
- Align different stakeholder groups to pursue a common goal

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- Big picture thinking and vision for the built environment
- Align different stakeholder groups to pursue a common goal
- Applicable and useful to practitioners

System Enablers for a Circular Economy Task Group



Ara Nik
Senior Sustainability Consultant
AESG



Nicoletta Michaletos
Consultant, Sustainability & Physics
Buro Happold



Maya DeSouza
Circular Economy Director
Business in the Community



Georgina Elliot
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Architect
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Structural Engineer
Ramboll



Kathryn James
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Matthew Teague
Architect
Tata Steel



Rosie Dodd
Consultant
The Carbon Trust



Debbie Ward
Knowledge Transfer Manager
University of Wolverhampton

System Enablers for a Circular Economy

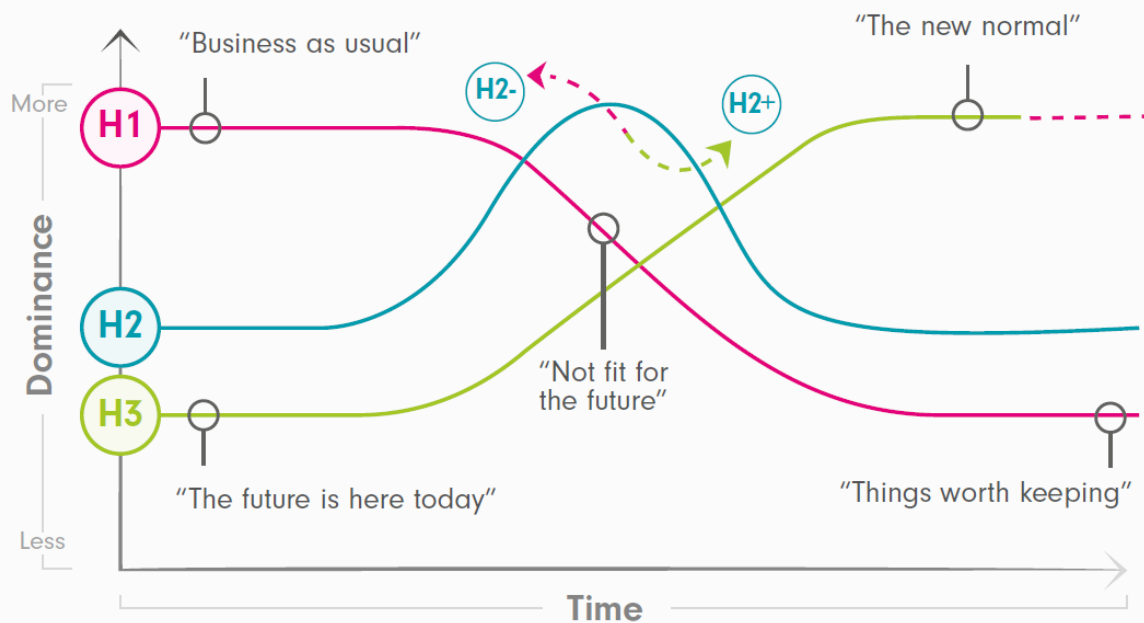


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Download now



Three Horizons Model



H1

Horizon 1:

The current dominant system, or business-as-usual. Thinking within this horizon means managing existing realities for the system to remain successful. The Three Horizons Model assumes that this system is no longer fit for purpose under emerging conditions and will need to adapt and/or decline.

H3

Horizon 3:

The emerging future of a radically different world and vision to aspire to that should become the new business-as-usual over time.

CHAPTER ii

H2

Horizon 2:

The innovations that help us transition from our current system (Horizon 1) towards the emerging future (Horizon 3), by showing us that a new system is possible. Note that these innovations might not always be supporting the emerging future (H2+) but can manifest the current system in new ways (H2-). Careful evaluation of which Horizon they support is paramount.

CHAPTER iii



ECONOMIC SHIFT

Move away from an economy focused on GDP toward one that operates within planetary boundaries.

> Change the goal of the system

- From maximising profit outcomes for planet and society.

> Shift paradigms

- From individualism and competition to collaboration and sharing.
- From short-term to long-term perspectives.
- From extractive to regenerative processes.
- From separate to nature to embedded within nature.

> Shift mindsets

- Towards sufficiency, sharing, as culture of care and stewardship, and responsibility to future generations



INDUSTRY ENABLERS

Action-orientated enablers for practitioners in the built environment

- Collaboration and early engagement
- Secondary materials market
- Circular economy design principles
- Green contracts and leases
- Tax and legislation
- Green finance
- Metrics, indicators, and benchmarks
- Education

Stakeholder actions:

POLICY ACTIONS:

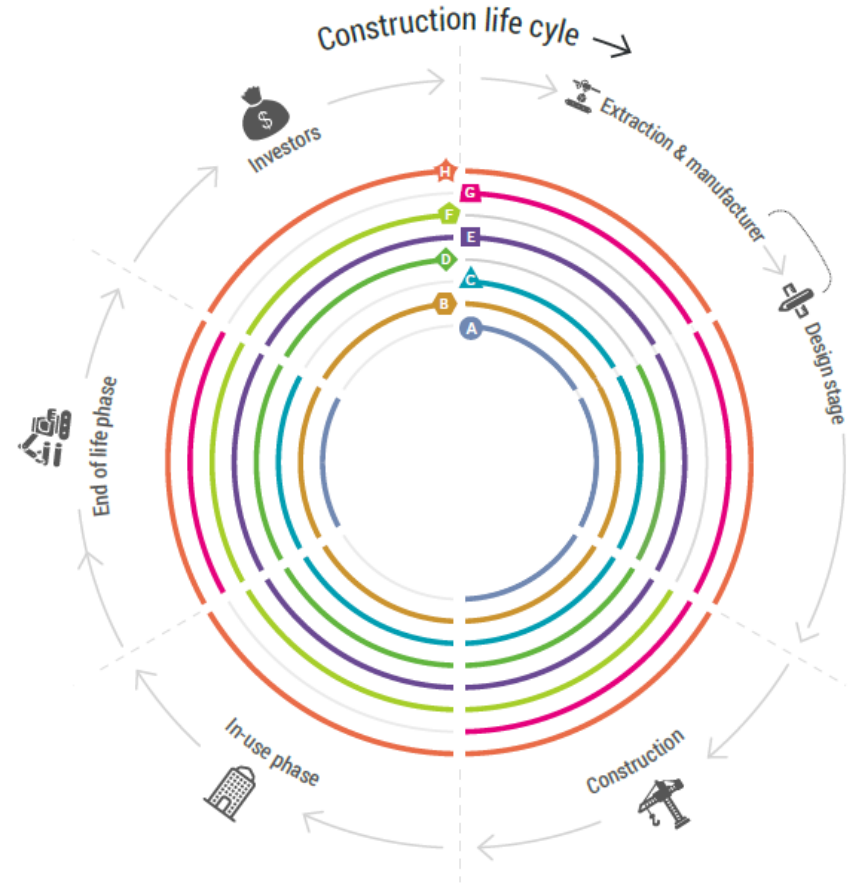
- **National government** and **local authorities** should support requirements for WLC data to be collected (see [Part Z](#)). Support the industry in measuring and reporting to help build a database. Set whole life carbon targets with policies that incentivise reuse and regenerative materials.

INDUSTRY ACTIONS:

- **All stakeholders** will need to work towards a consistent reporting format and data to allow consistent and comparable data and reporting.
- **Clients, architects, and engineers** should collect and report circularity-related metrics on your projects. **Manufacturers** should do the same for their products.
- **Developers, architects, engineers, contractors, and product manufacturers** all need to increase data transparency via central databases. Data ownership will vary across each stakeholder, requiring a comprehensive effort across the value chain.⁴⁴ Quantify the benefits of implementing circular economy approaches on the project.
- **Occupiers and facility managers** need to generate and improve datasets relating to embodied carbon from the use stages of buildings. While a significant share of embodied carbon occurs during refurbishment, repair, and maintenance, the data for this is less prevalent. As with domestic retrofit, non-domestic refurbishment approaches to improving energy performance should be assessed through a whole life carbon lens.⁴⁵

Industry Enablers

- A** Collaboration and early engagement
- B** Secondary materials market
- C** Circular economy design principles
- D** Green contracts and leases
- E** Tax and legislation
- F** Green financing
- G** Metrics, benchmarks, and indicators
- H** Education



B Secondary materials market

A marketplace for materials and construction products that had a previous life. Easy to procure from.



Related enablers:

-  Collaboration and early engagement
-  Circular economy design principles

Barriers it addresses:

Limited availability of secondary materials.

Since reused materials only become available when a building reaches its end of life and is carefully deconstructed, timelines of material demand and availability often don't align. Tight programmes on most construction projects make it difficult to procure secondary materials, which means most projects default back to traditional procurement routes using new products and virgin materials.

Limitations on storage of secondary materials.

Because of the tight timelines in the construction industry, storage of secondary materials is often necessary until their destination and onward use are confirmed. A lack of widespread storage options, and often high costs associated with it, make it difficult to store materials, rendering potential reuse more unlikely.

Difficulties in the procurement of secondary materials.

Secondary or reused materials compete with a global market of new materials that offer a reliable and quick route of procurement in a tried and tested process at fixed prices. Reused materials, in comparison, lack this ease of procurement and currently require some investigation into their availability, quality, associated warranties, and cost.

Risk is pushed onto contractors. When second-hand materials are specified without availability and access to these products, the risk for procuring disproportionately sits with contractors as they might not be able to procure the specified materials at the required time.

How it helps overcome them:

A functioning secondary materials market is essential for mainstreaming the procurement of reused building materials by making this process easy and accessible, and therefore a true alternative to the current procurement of new products. The wide availability of these secondary materials will help distribute risk fairly and give confidence to markets and

procurers. There are currently two main approaches – reuse hubs and manufacturers offering refurbished products. Both hold value, depending on the type of product. Simpler building materials such as bricks, steel, and insulation are suited to reuse hubs, while more technical products are better suited for manufacturer schemes – for example, refurbished lighting, raised access floors, and glass partitions.

Example application

Material passports

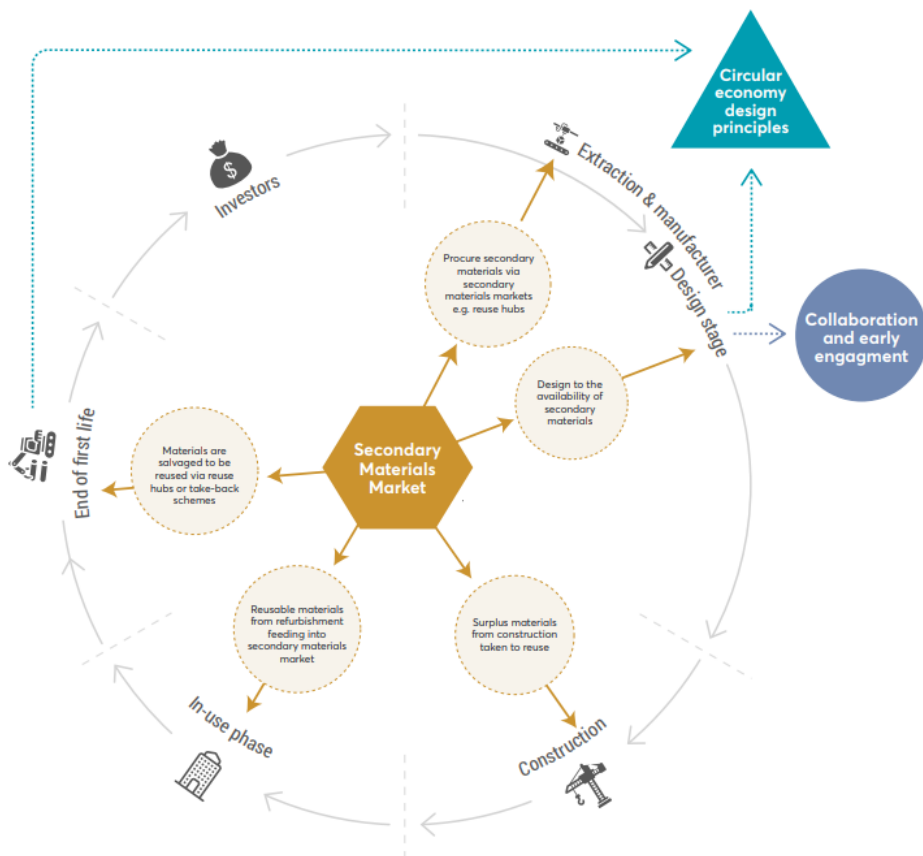
Material passports offer a tool to gather data on construction products and materials, linked to an accessible database. This provides proof of provenance, as well as clarity on existing materials and refurbishment cycles, critical information to obtain the confidence of buyers in a secondary materials market.

By providing detailed information on the composition of a building prior to its deconstruction, a material passport can act as an enabler for potential reuse as it provides insights to designers on the future availability of materials. This 'track and trace' element is vital for the Horizon 3 vision of buildings being designed according to the availability of secondary materials.

Reuse hubs

To overcome the shortage of storage for secondary materials, local reuse hubs can offer an affordable solution. This way, materials that free up from deconstruction can be stored, remanufactured, and restored, building a basis for a second-hand materials market for construction procurement. This will also increase quality control and support the development of higher-value secondary markets.

FIGURE 6: SECONDARY MATERIALS MARKET



Stakeholder actions

POLICY ACTIONS:

- 1 **National government** to establish a nationwide second-hand materials database, building on city-level networks.¹³
- 2 **National government** needs to incentivise secondary materials markets to be established and create conditions for investment.
- 3 **National government** update waste planning policy to require space provision is made in local plans and provide funding for this.
- 4 **National government** to introduce pre-demolition and pre-redevelopment surveys nationally to identify items for reuse and recycling, with **local authorities** providing channels to where they can be applied and stored.
- 5 **Local authorities** should collate information on secondary material availability and storage centrally as part of a public database illustrating supply potential.
- 6 **Local authorities** to explore local sites for the possibility of providing storage space as part of a reuse hub as well as digital options and supporting businesses which already offer these services.¹⁴
- 7 **Local authorities** to support the growth of regional specialist circular products and services relating to the construction industry. Work with and mobilise supply chains.¹⁵

INDUSTRY ACTIONS:

- 1 **Investors** explore, with legal teams, contract arrangements to address risk i.e. warranty and liability for reuse products and materials. A suggested approach is that the responsibility of the product should sit with the client and the responsibility of installation should sit with the contractor even where products are taken off-site. This will be a commercial negotiation between the client and the contractor.¹⁶

FIGURE 13: INDUSTRY ENABLERS SUMMARY



Today's Speakers



Nicoletta Michaletos
Senior Consultant

BURO HAPPOLD



Peter Kelly
Group Director of Sustainable
Operations



Kathryn James
Public Affairs and
Sustainability Advisor





Nicoletta Michaletos
Senior Consultant

BURO HAPPOLD

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Systems Thinking

For System Enablers for a Circular
Economy

Nicoletta Michaletos

January 2023

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*Local and sustainable
sourcing*



*Local and sustainable
sourcing*



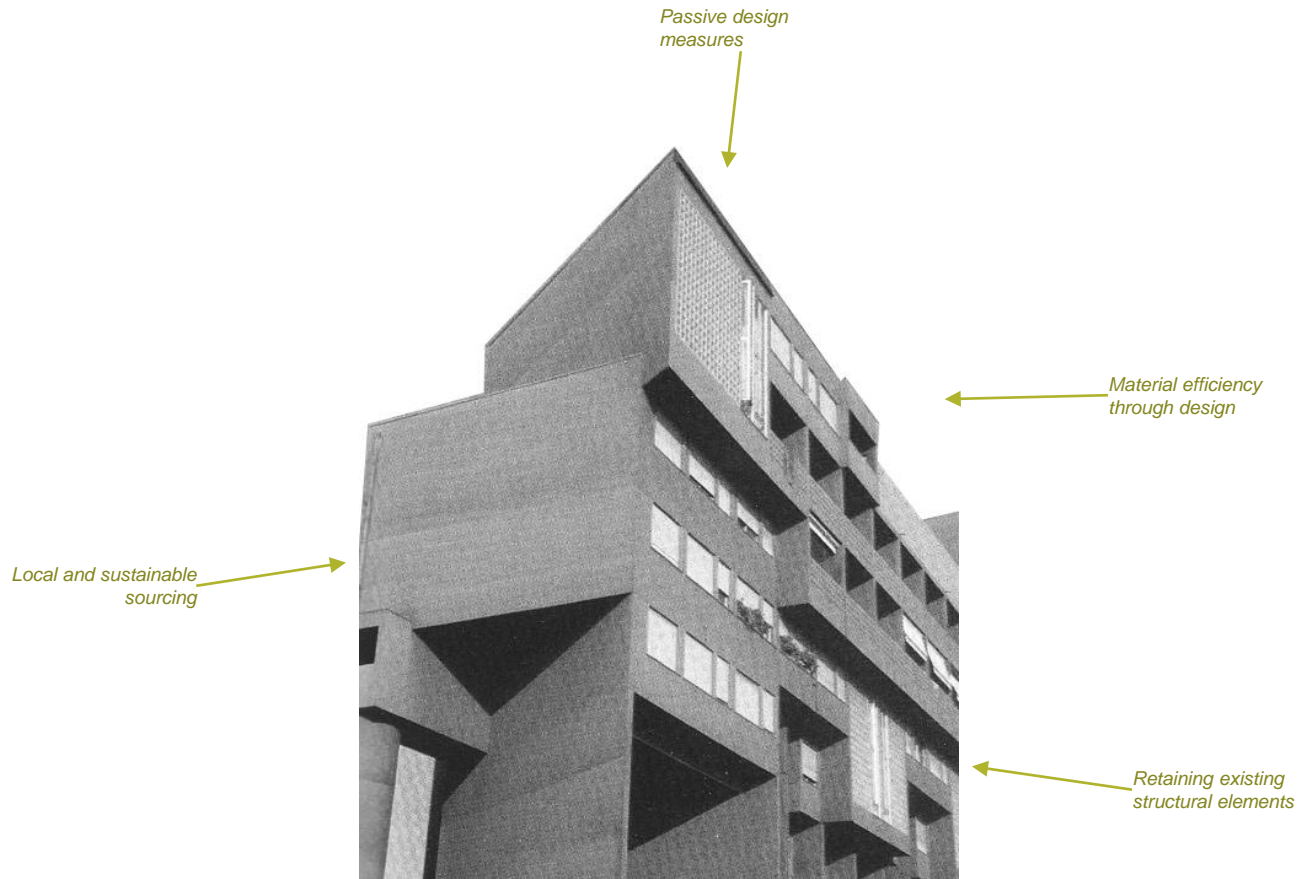
*Material efficiency
through design*

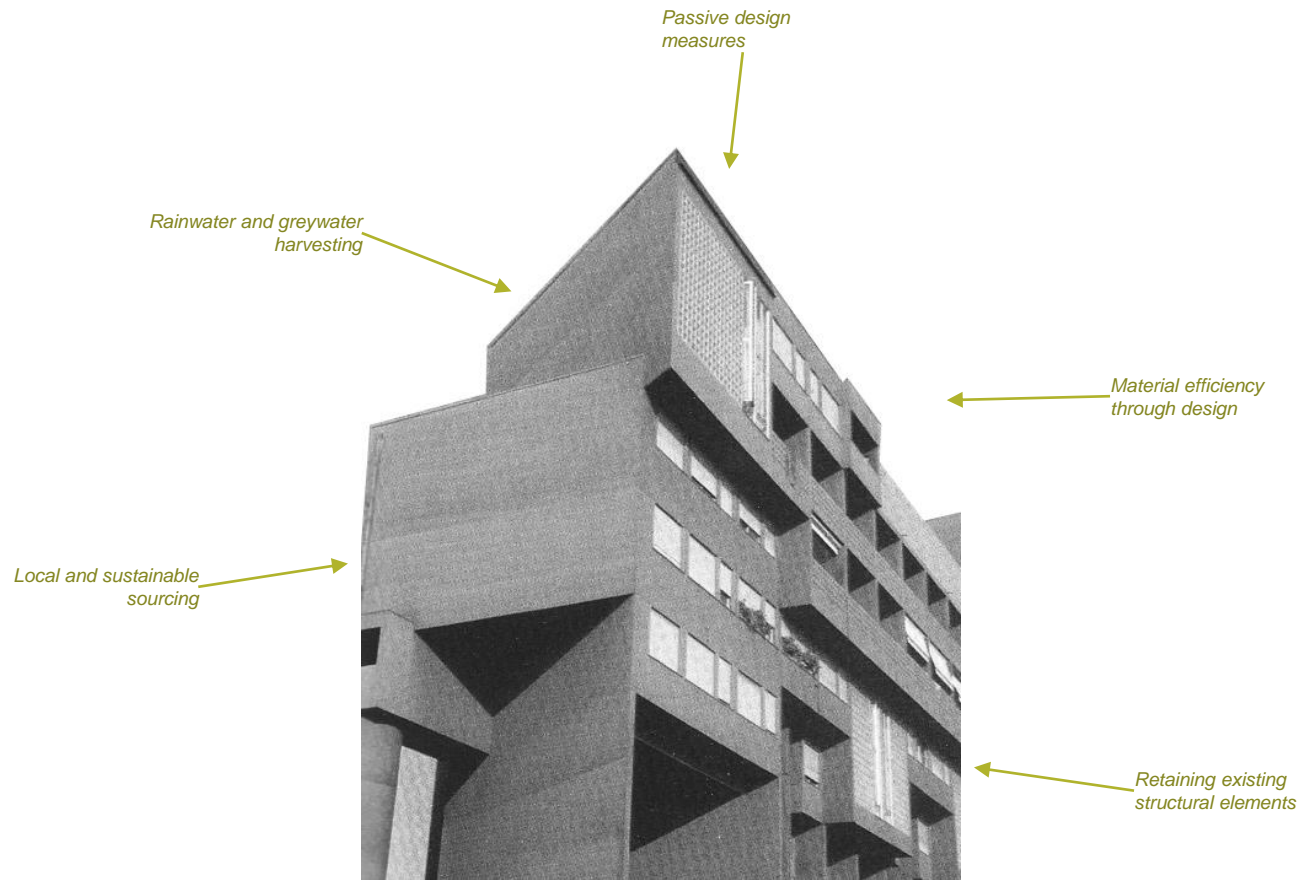
*Local and sustainable
sourcing*



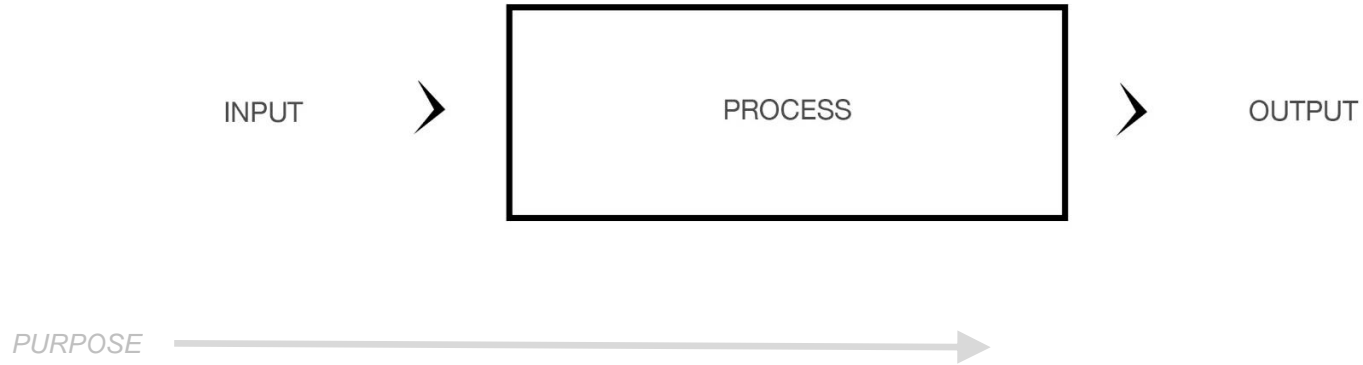
*Material efficiency
through design*

*Retaining existing
structural elements*



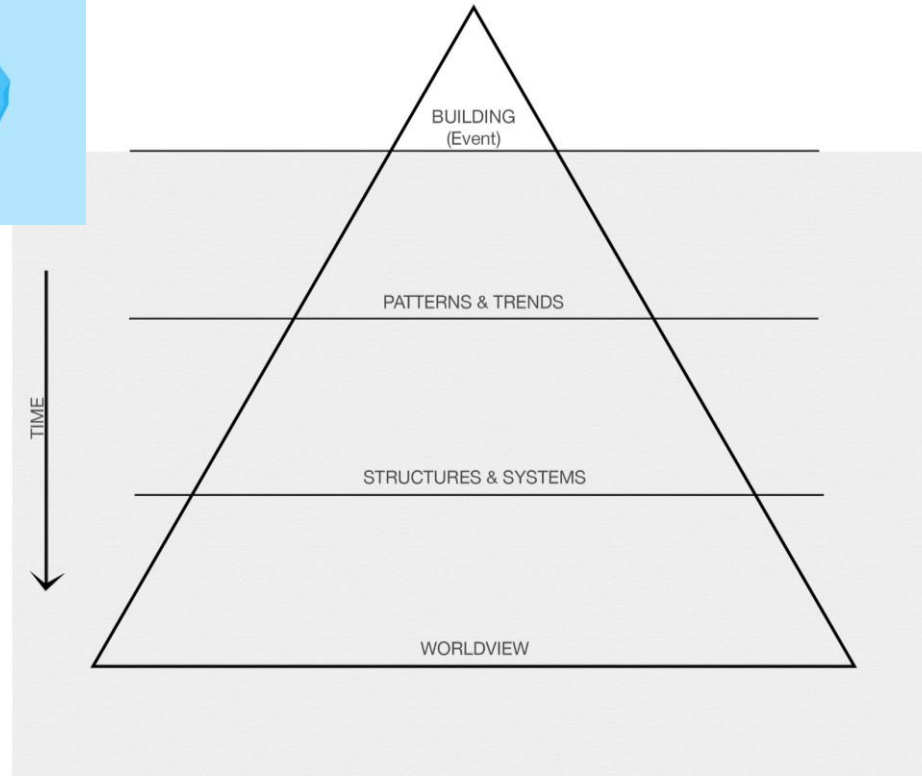
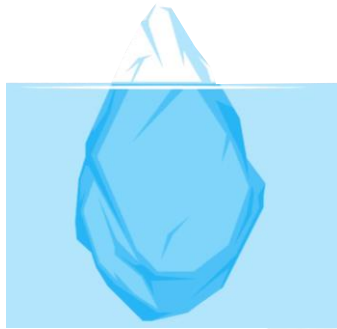


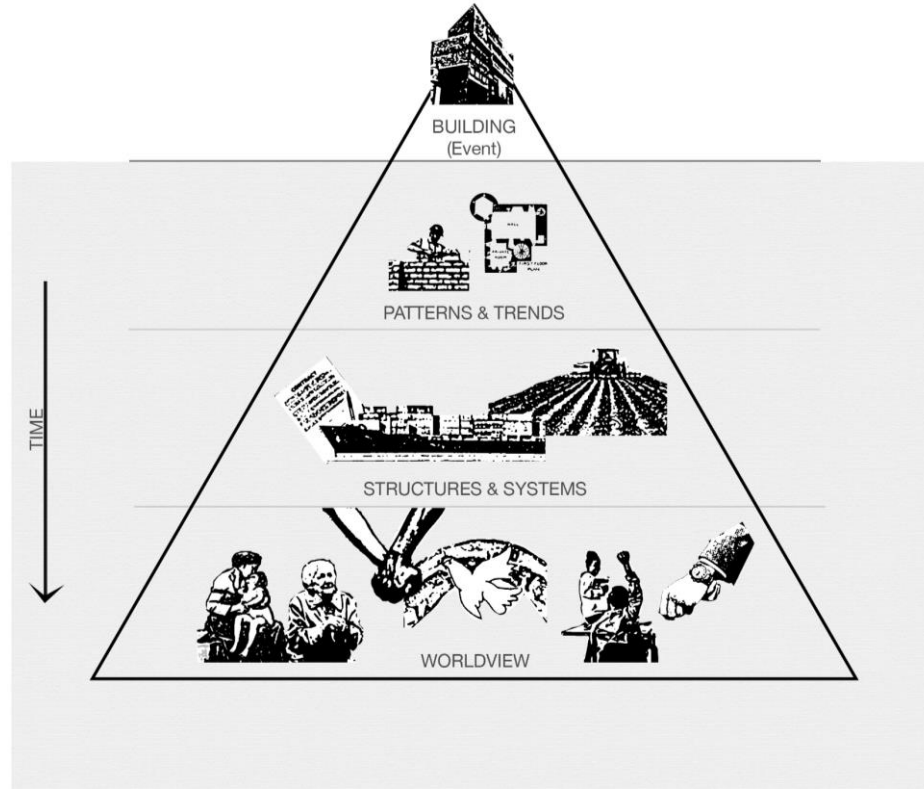
What is systems thinking?

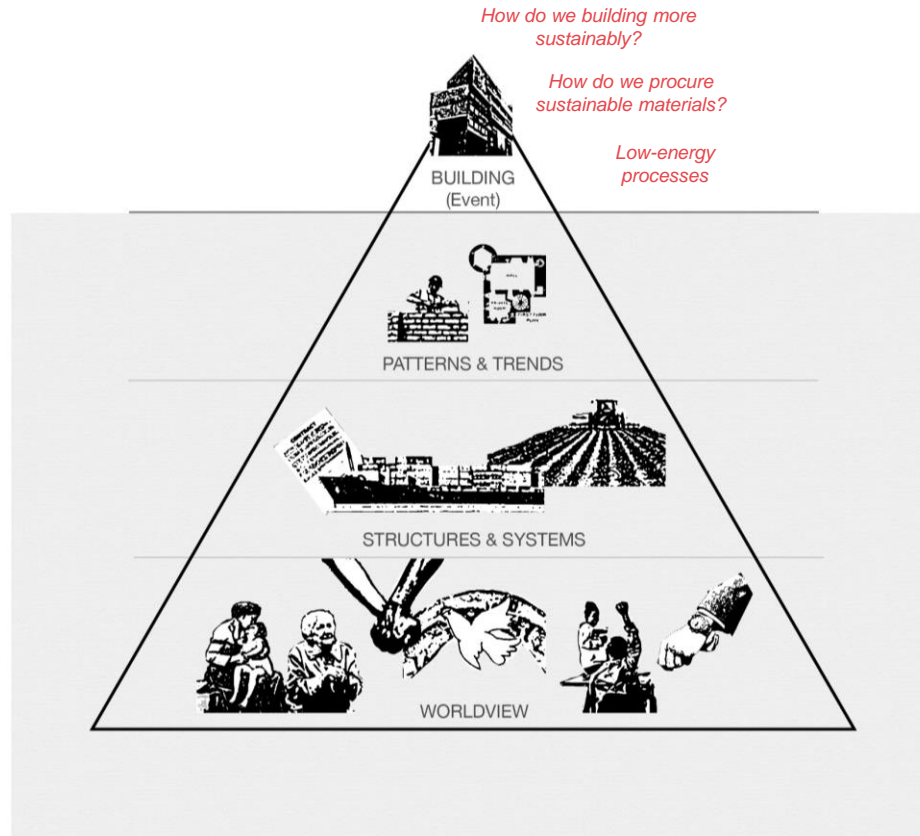


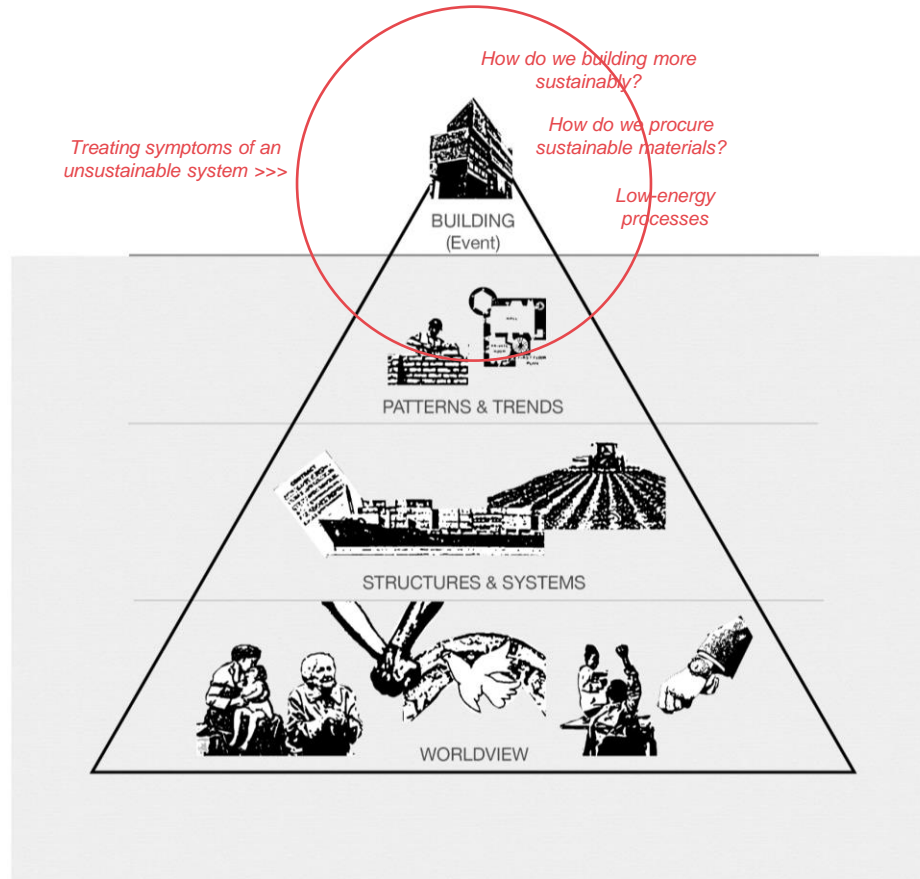
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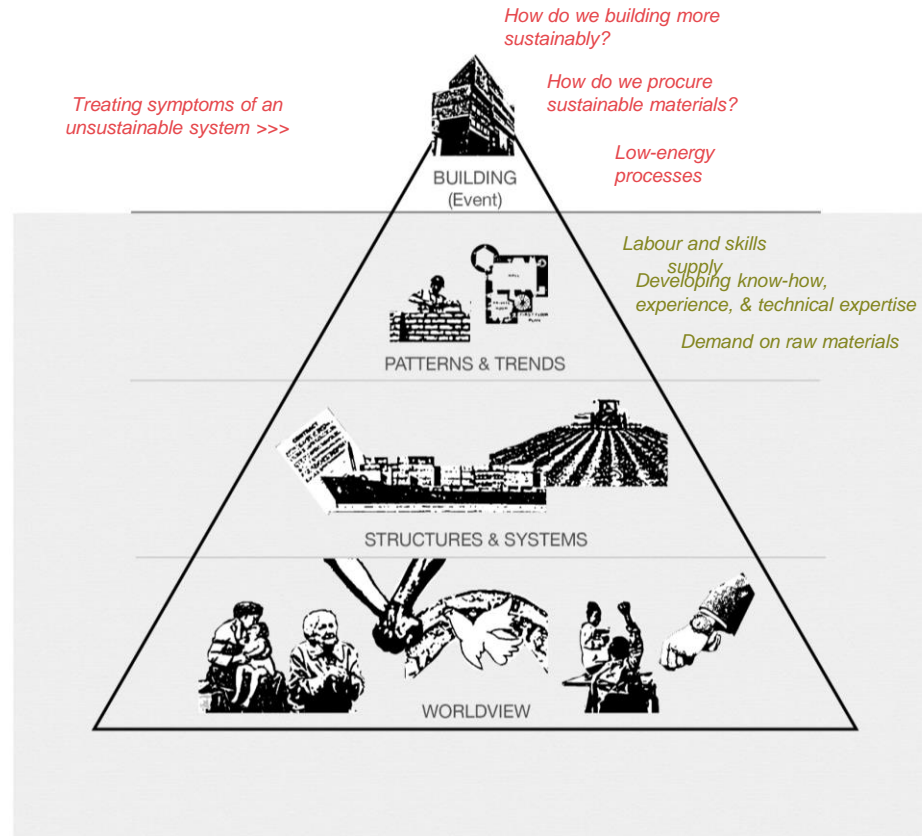


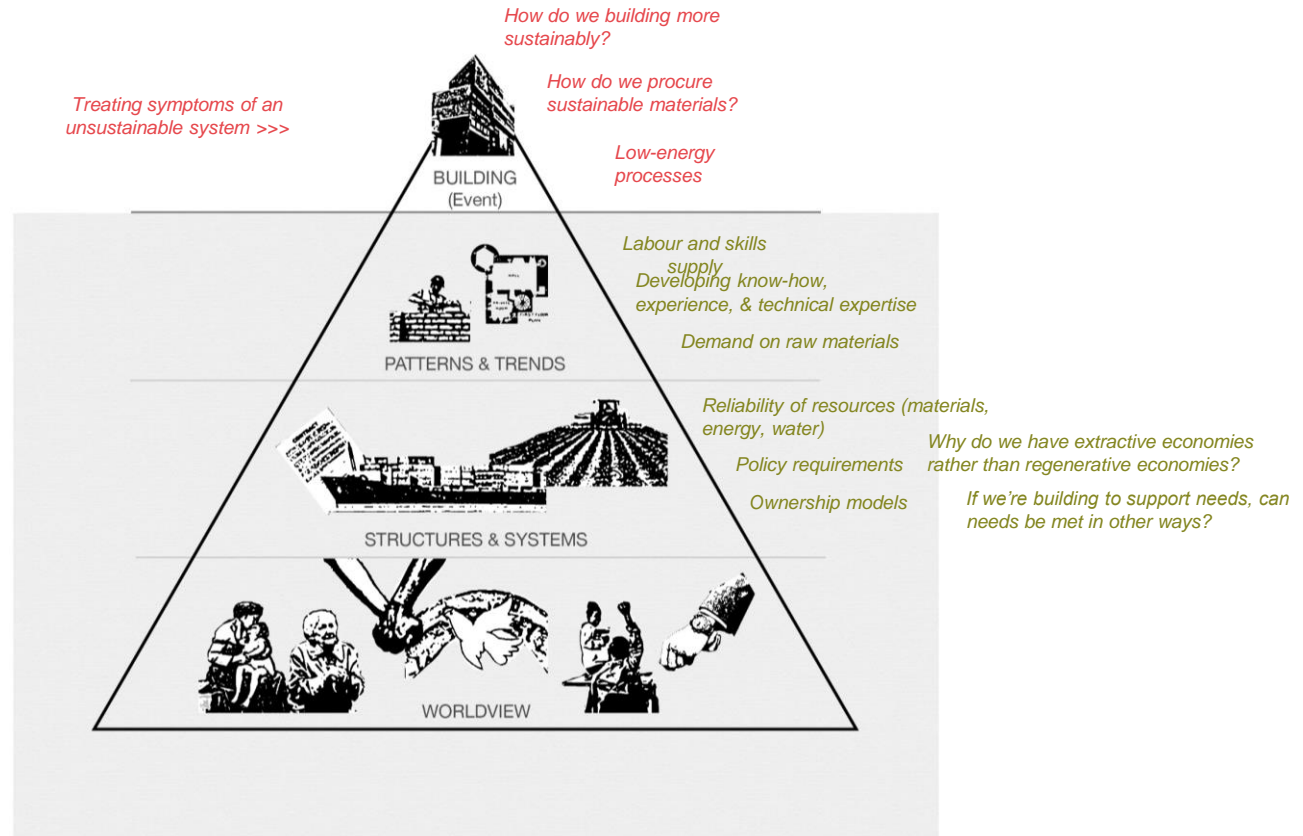


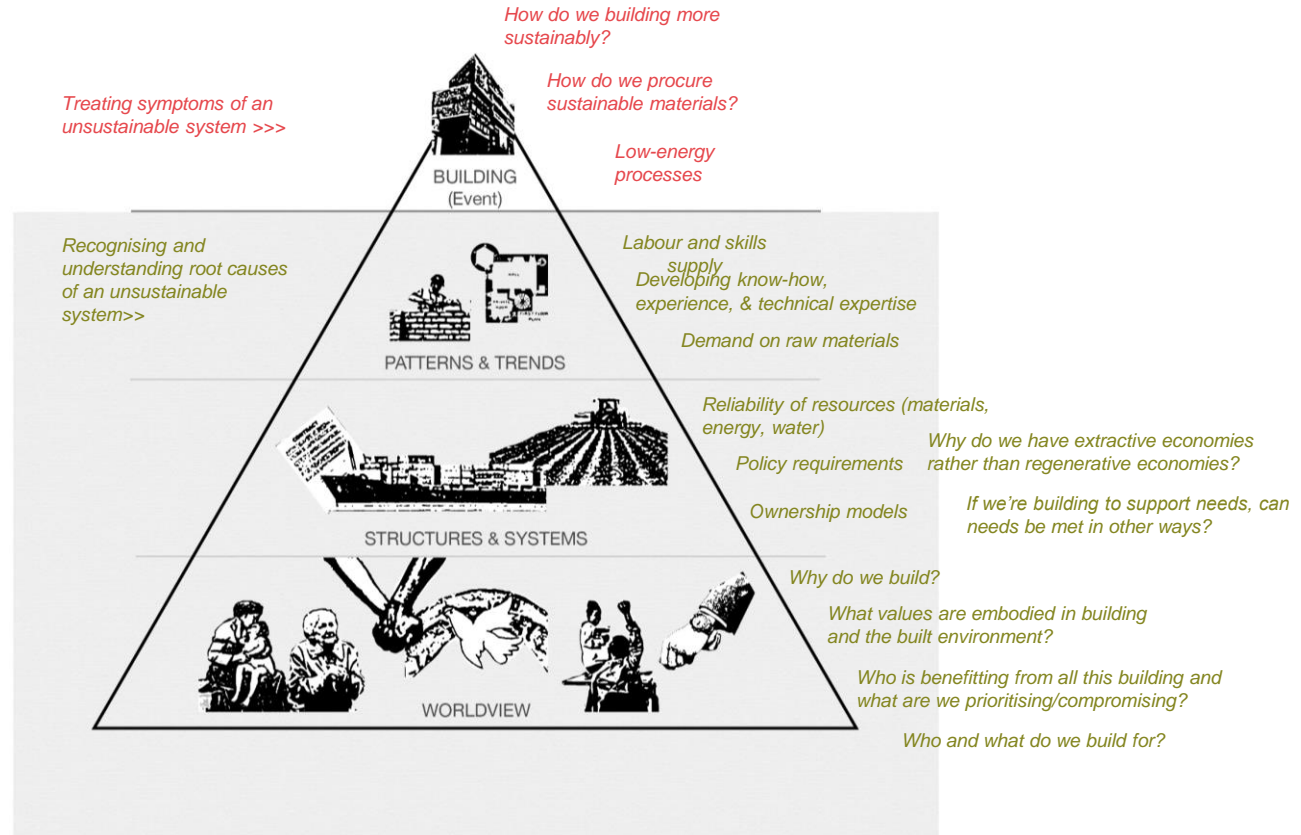


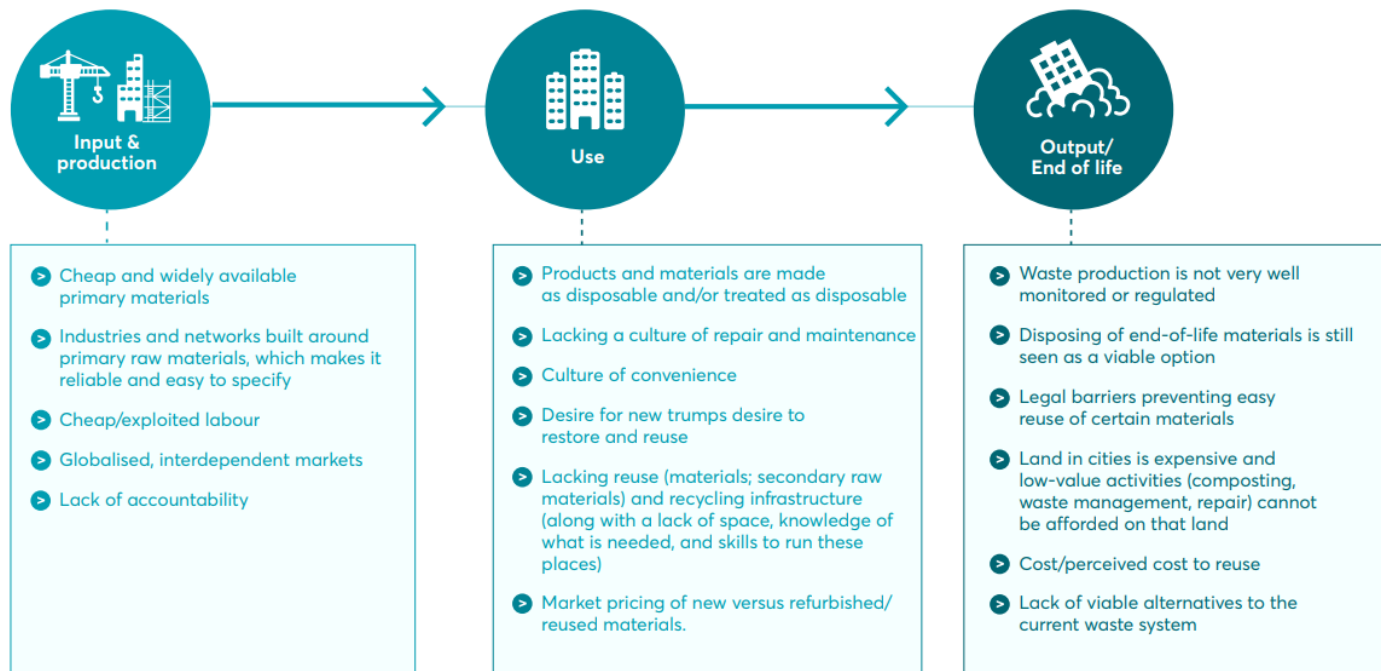


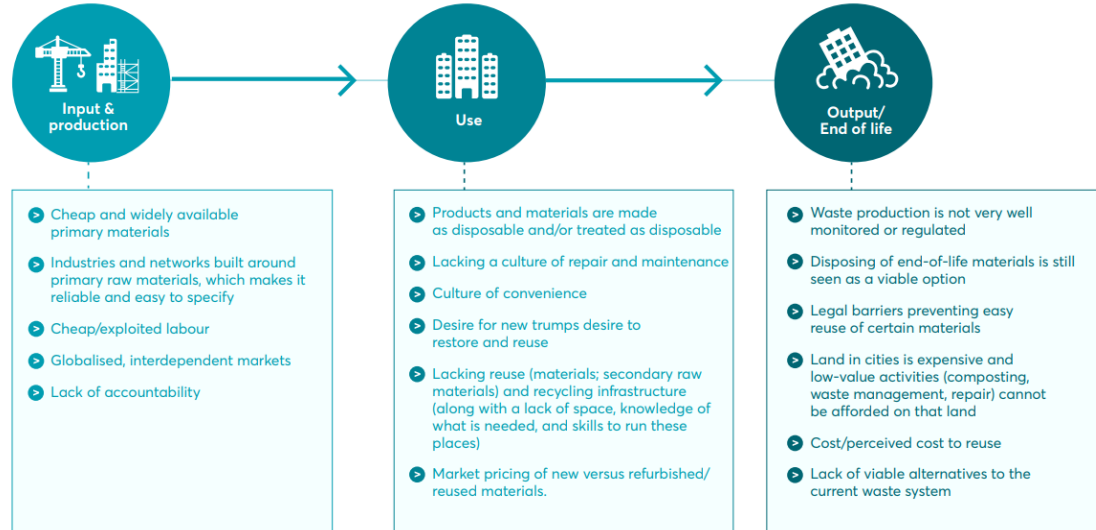
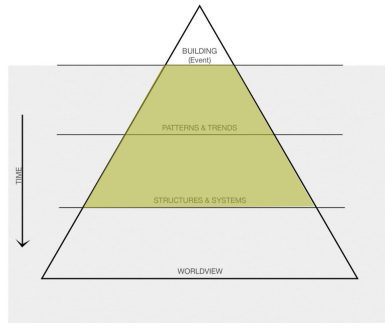


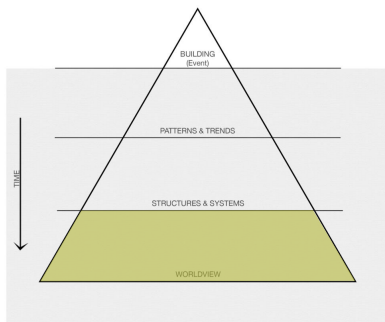












STRATEGIC OBJECTIVES

To accelerate the shift from a linear to a circular economy, some strategic objectives have been identified. These objectives provide long-term pathways to cluster and direct various efforts made in the short and medium-term.

> Environmental:

- Planetary boundaries are not exceeded
- The true value of raw non-regenerative materials is reflected in their price (balance tips in favour of secondary materials)
- Zero carbon trajectory

> Social:

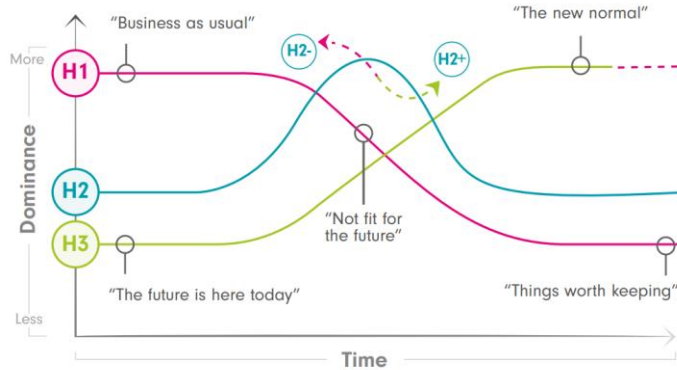
- Mindset shift in high-income nations – consumption behaviour and high-consumption lifestyles
- Less demand for 'new' things
- Low-resource lifestyles
- Established routes for sharing resources and information
- Fairer distribution of resources we use
- Holistically take on our role as stewards of the built environment

> Economic:

- Reliant on regenerative, renewable, and inclusive resource flows
- Urban development supports localised loops (e.g. knowledge, space, and tools needed to maintain, reuse, upcycle and recycle materials locally and regionally)
- Creation of new sustainable market opportunities such as secondary materials market as well as the market for eco-designed products
- Focus on a thriving economy beyond GDP growth

In summary...

- Behaviour over time breeds structures and systems – like walking the beaten path, it facilitates ease, reliability, access, legibility, etc.
- What we value as a society defines the purpose and the drive behind behaviours
- Recognising aspects that drive linear, unsustainable systems at all tiers will help reframe the issue
- The inclusion of time through the tiers will help to define the things we can do in the short and medium term to be aligned with longer term objectives





Peter Kelly
Group Director of
Sustainable Operations



UKGBC System Enablers for a Circular Economy

Launch Event

Challenge 1: Existing Buildings



Challenge 1: Existing Buildings – Industry Enabler - Second-hand Materials Market



Challenge 2: Buildings to be Built/Refurbished

City approves revised plans for Aldgate office development

Experts call for ban on glass skyscrapers to save energy in climate crisis

Green watchdog MPs are calling on the Government to enact sweeping changes to cut building demolitions in favour of the reuse of existing stock.

"We are delighted that these plans to deliver highly sustainable and energy-efficient office and retail properties....The scheme will improve public spaces while making it easier for people to travel sustainably in the local area with new or improved pedestrian routes and cycle parking."



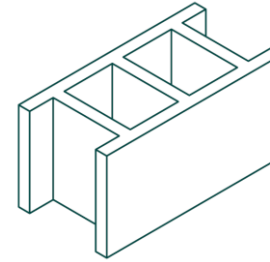
Challenge 2: Buildings to be Built/Refurbished – Industry Enabler - Design for Disassembly and Circular Design Principles

DfD / DfMA-D

End design for
demolition

Materials
Passports

Digital and kept
up to date



Unique Identifier:
BLK-X-00001
Name:
Hollow Block
Material:
Concrete
Dimensions (WxHxL):
215 x 215 x 440
Method of Fixing:
Cementitious mortar
Date of Manufacture:
04/2018
Place of Manufacture:
United Kingdom
Installed:
10/2020
Maintenance History:
N/A
Performance grade:
Band A
Aesthetic grade:
Band 1

Stolen from Orms:
http://orms.co.uk/~ormscouk/wp/wp-content/uploads/2021/05/Orms-Materials-Passports_flipbook-correct-QR.pdf

Challenge 1 & 2: – Industry Enabler - Metrics, Indicators, and Benchmarks

Metrics,
indicators, and
benchmarks

Industry standard

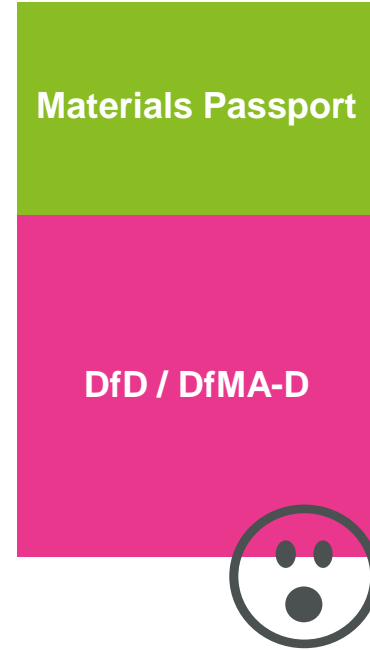


Dave Cheshire • 1st
Sustainability Director at AECOM
2w •

Brilliant Circular Economy Hackathon today to thrash out a metric for a circular building. Future re-use potential was the general consensus. Thanks to [Tim den Dekker](#) [Tessa Devreese](#) and many others for organising. And the Dragons who interrogated the ideas: [Rafe Bertram](#) [Giorgia Franco](#) @mark Webster and @nicola Tilley. And great to see [Oli Haddon](#) , [Rachel Hoolahan](#) [Kat Scott](#) [Michael Sansom](#) [Nicholas Pigula](#) [Kell Jones](#) [Danielle Densley Tingley](#) and many others.



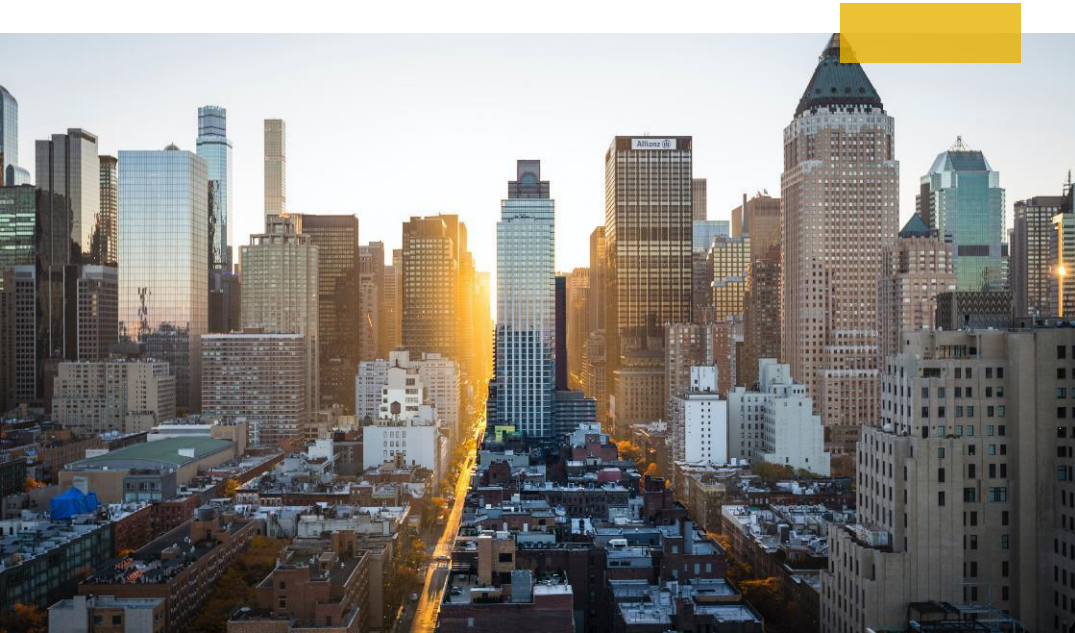
Challenge 1 & 2: Industry Enablers – Where Are We?





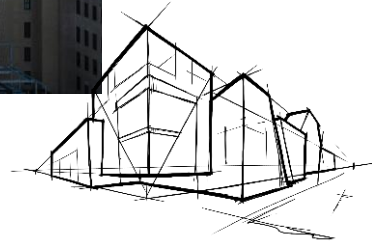
Kathryn James
Public Affairs and
Sustainability Advisor





“System enablers for a circular economy” launch

Jan 31, 2023



Circularity at ROCKWOOL

Abundant raw material:

Stone is by far the most abundant natural resource on Earth

The Earth produces 38,000 times more stone through volcanic activity than we use annually to produce stonewool

Industrial waste:

Incorporating waste from our own process and other industries in our raw material mix reduces dependence on landfill and transforms waste into valuable products

Durability:

If installed correctly and left undisturbed, our products will last for the lifetime of the building and will perform consistently over time

Recycling of product:

We offer a takeback scheme for clean ROCKWOOL offcuts from construction sites and OEM customers. Our product is infinitely recyclable with no degradation of performance

“If you build it, they
will come.”

Or will they?



Why systems thinking matters to us

- ROCKWOOL have long put circularity at the heart of what we do
- We are a small cog in a large and complex ecosystem
- Collectively, we can implement the recommendations in this report to change the way we see waste and recognise its value



Q&A panellists



Kai Liebetanz
UKGBC



Nicoletta Michaletos
Buro Happold



Peter Kelly
ISG



Kathryn James
ROCKWOOL

Q&A

- Please put any questions in the Q&A option in zoom rather than the chat

Next steps



Dissemination
Engagement

Next steps



Dissemination
Engagement



Circular Economy as part
of our Resilience and
Nature Programme:

Embodied Ecological Impacts, Summer 2023

Upcoming events



FEBRUARY 7, 2023

EVENT: Commercial Retrofit – Site tour of Hanover House, Manchester

Join us for a site tour of Grade II listed Hanover House, Manchester, to explore how heritage buildings can be successfully retrofitted to improve building performance, while retaining conse...

[READ MORE](#)



FEBRUARY 21, 2023

EVENT: Whole Life Carbon Roadmap Stakeholder Series: Infrastructure Clients, Owners and Designers

Join us for an interactive workshop exploring the Net Zero Whole Life Carbon Roadmap Stakeholder Action Plans, to better understand how to implement the key immediate actions recommended, le...

[READ MORE](#)



FEBRUARY 23, 2023

EVENT: Collaboration Café – Contractors and Construction Products / Materials: Race to Zero

UKGBC has launched a pilot series of Collaboration Cafés, as part of our role as an Accelerator to the UNFCCC's Race to Zero campaign. The events are designed to convene [...]

[READ MORE](#)

Thank you for attending!

Any questions, please get in touch at circular@ukgbc.org

ANZ Programme Partners:



Project Partners:

