

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



CIRCLE HOUSE - How do we create collaborative circular business models for the construction sector?



Construction and the Built Environment



Construction and the Built Environment

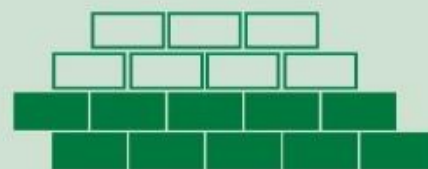
↑ +3_{BN}



middle class
growth in 2030.

Middle class +3bn

↑ +70%



growth of demand for global
construction in 10 years.

+70% demand

↑ x1,5

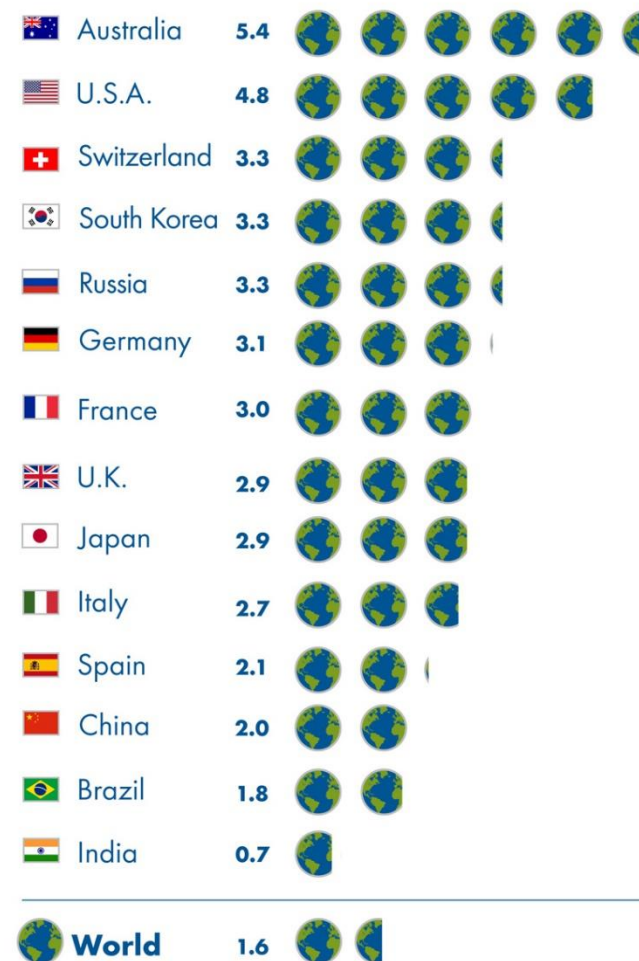


more resources use than the
planet can provide in 2015.

> 1.5 Earths needed

Images: 3XN

How many Earths do we need if the world's population lived like...



Source: Global Footprint Network National Footprint Accounts 2016



Earth Overshoot Day

- **was 11 days ago**

Fundamentals: Circular Economy

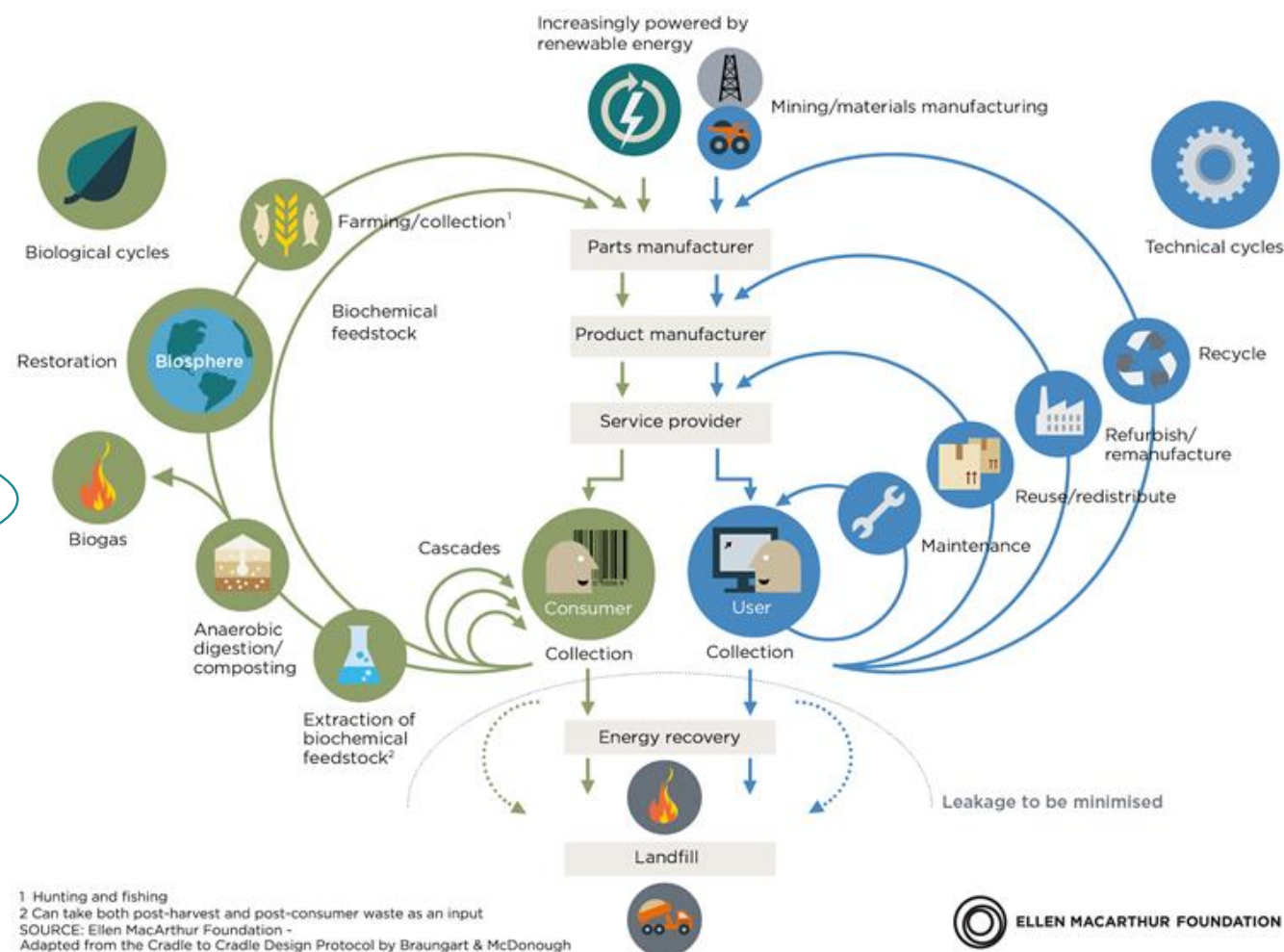
Biological and technical cycles

1 – Preserve & enhance natural capital

2 – Optimise value in resource loops

3 – Design for system effectiveness

CIRCULAR ECONOMY - an industrial system that is restorative by design





Images: 3XN

CASE: Up-cycle house – Lendager Group



Upcycled materials and components
Cost neutral - Near zero energy building
86% reduction of carbon emissions

Photo: Jesper Ray

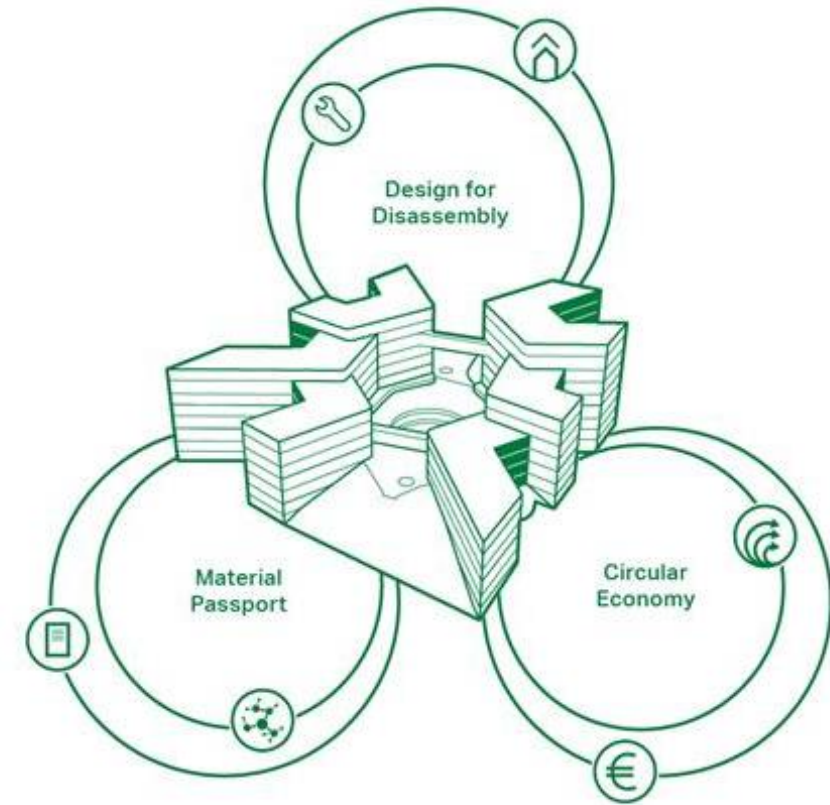


CASE: Jaegers Sports Facility – Vandkunsten



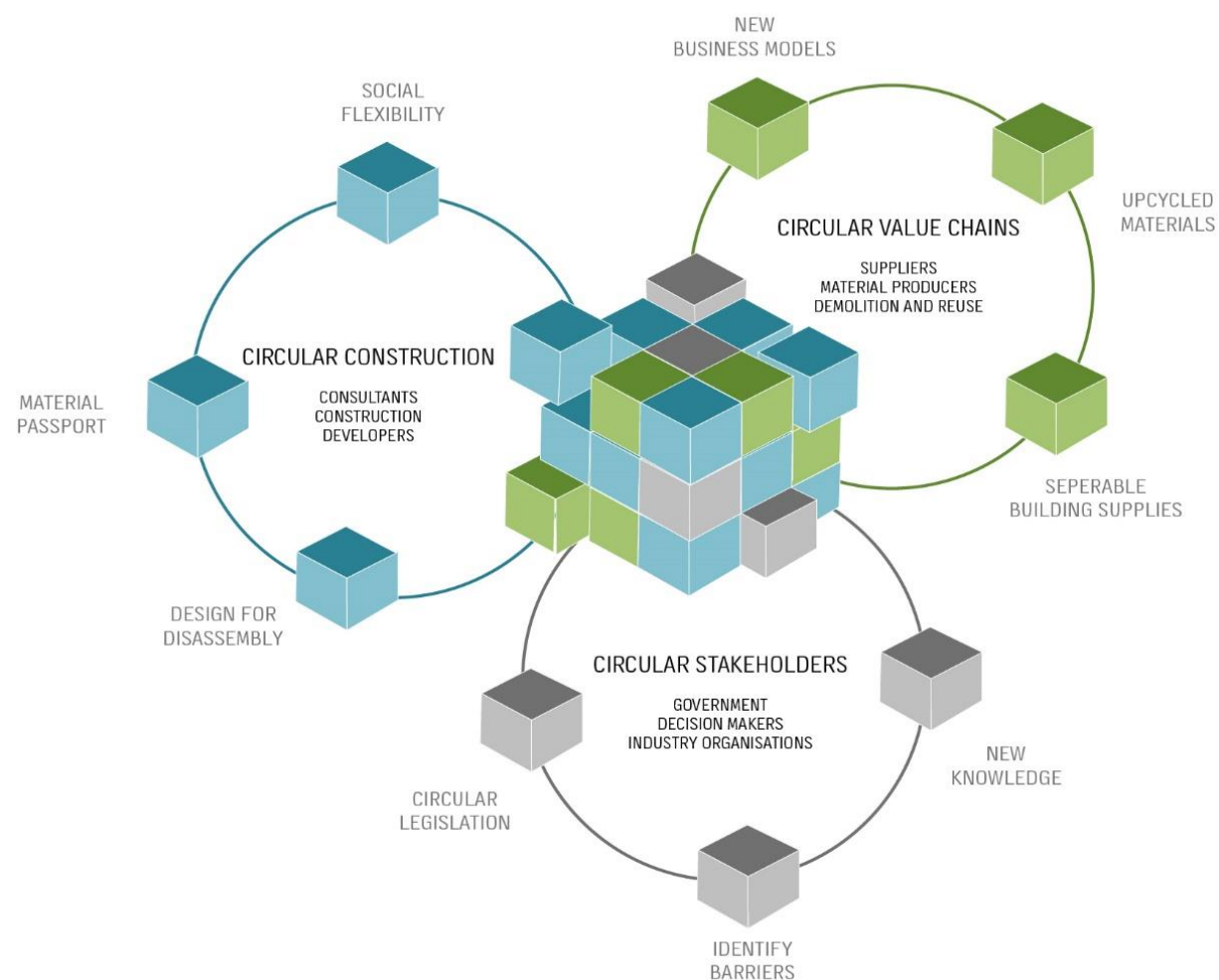
Photo: Mads Frederik

CASE: The four Agencies Building – 3XN



Building a Circular Future

CIRCLE HOUSE – an innovation project by 3XN, Lendager Group & Vandkunsten



1 – Circular business models in value chain

2 – Circular design & construction principles

3 – Stakeholder involvement

CIRCLE HOUSE – partnerships in the construction value chain:



Circular Construction fundamentals:

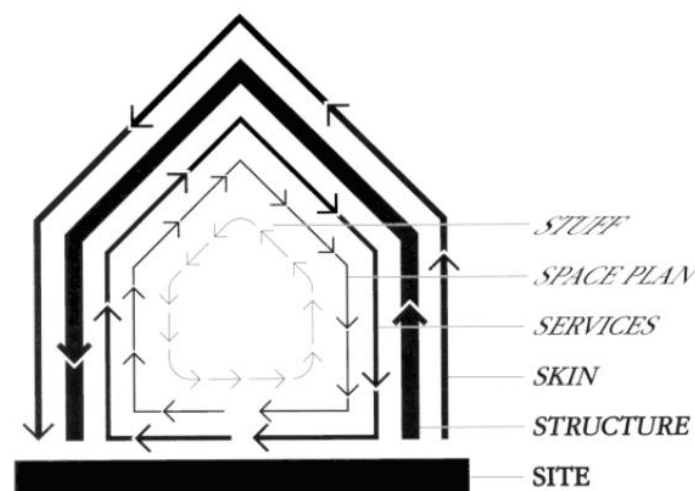
1 – Very diverse lifecycles: 1 – 100+ years

2 – Keep track of materials quality

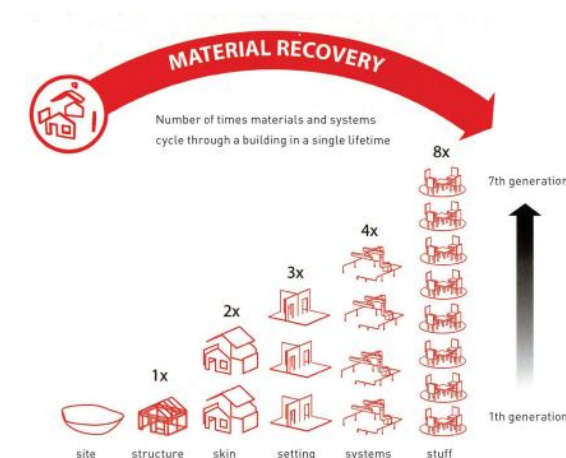
3 – Use standards for components

4 – Make reversible connections

5 – Plan for disassembly and reuse



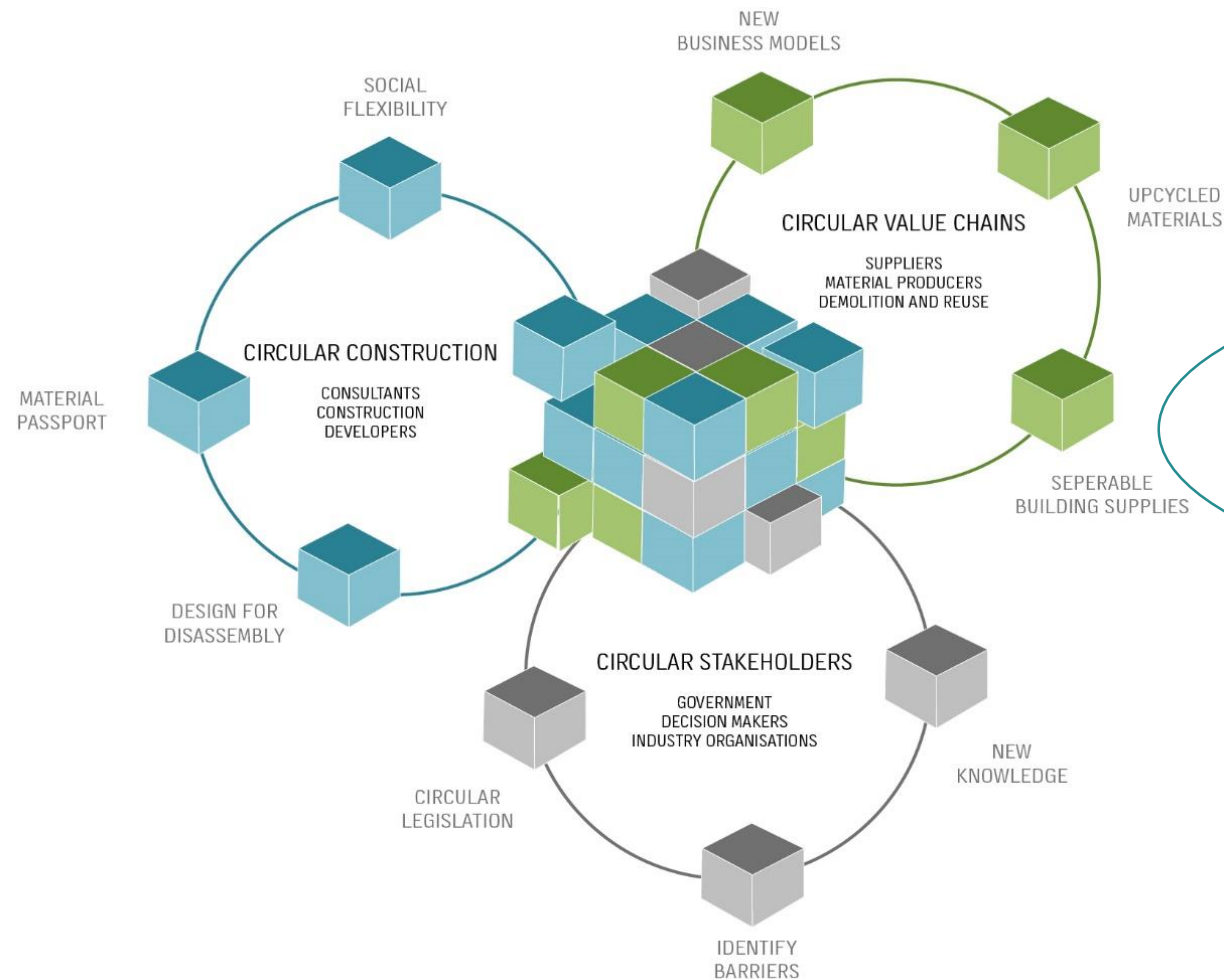
Brand 1994



McDonough 2009

Images: Bstewart rand & William McDonough

Construction business challenges:



1 – Very diverse (and fragmented) value chain

2 – Short term profit focus

3 – Very long term value creation

5 – Lots of stakeholders: clients, users, society

4 – Access to finance

Construction business potentials:

1 – New businesses needed

2 – Create incentives for all in value chain

3 – Design new business models

4 – Form new partnerships

5 – Circulation: maintain and enhance value



New businesses

To complete the circle in the circular economy model, new businesses need to emerge.

Physical

New facilities are necessary to manage, handle and certify building materials and elements.

Financing

New opportunities for business investors will kickstart the circular economy.

Consultants

Intermediary consultants can bring the different parties together.



Incentive

All partners in the supply chain will have to benefit economically.

Business

It must be visible that the implementation of a circular economy is beneficial for the business.

Society

It must be visible that the implementation of a circular economy is beneficial for the society.

Environment

Implementation of the circular economy model creates a positive impact on our environment.



New models

Rather than creating products, businesses need to provide the user with a service.

Access over ownership

Get the service of the product rather than the product itself.

Leasing

A performance based contract where the user hands back the product after a defined period of use.

Take back

Companies that facilitates take back of products at the their end-of-life.



Partnerships

Partnerships and collaboration agreements are necessary, thus nobody can run the circular economy alone.

Interdisciplinary

Collaboration between different professions are important to cover all aspects of the circulation.

Knowledge sharing

Communication and knowledge sharing across industries is important to get high quality and integrated solutions.

Benefit

All partners involved has to benefit from the collaboration for the circular economy to work.



Circulation

The value of the products in the technical and biological cycle as needs to be maintained as long as possible.

Redistribute

Products that are in good shape can be used several times.

Repair

Replace parts that need replacing and keep the product working for as long as possible

Recycle

Materials recovered after a products end-of-life will replace the use of virgin materials.

Building a Circular Future

So...

How do we create collaborative circular business models for the construction sector?

- Ideas are needed!



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Presentation available at www.danskeark.dk