CIRCLE HOUSE - How do we create collaborative Circular business models for the construction sector?
Construction and the Built Environment

7. Affordable and Clean Energy
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action

40% Energy use  100% Built area  35% Waste  30% GHG emission
Construction and the Built Environment

Middle class +3bn

+70% demand

> 1.5 Earths needed

- +3BN

middle class growth in 2030.

- +70%

growth of demand for global construction in 10 years.

- x1.5

more resources use than the planet can provide in 2015.
How many Earths do we need if the world's population lived like...

- Australia: 5.4
- U.S.A.: 4.8
- Switzerland: 3.3
- South Korea: 3.3
- Russia: 3.3
- Germany: 3.1
- France: 3.0
- U.K.: 2.9
- Japan: 2.9
- Italy: 2.7
- Spain: 2.1
- China: 2.0
- Brazil: 1.8
- India: 0.7

World: 1.6

Source: Global Footprint Network National Footprint Accounts 2016
Fundamentals: Circular Economy

Biological and technical cycles

1 – Preserve & enhance natural capital
2 – Optimise value in resource loops
3 – Design for system effectiveness
WASTE IS A RESOURCE
CASE: Up-cycle house – Lendager Group

Upcycled materials and components
Cost neutral - Near zero energy building
86% reduction of carbon emissions
CASE: Jaegers Sports Facility – Vandkunsten

Carbon neutral
Modular, renewable & recyclable
80% reduction of life cycle cost

Peter Andreas Satrup Architect MAA PhD Senior Adviser
CASE: The four Agencies Building – 3XN

Design for Disassembly
Turns 16m DKK demolition cost to 35m DKK asset value

Peter Andreas Sattrup Architect MAA PhD Senior Adviser
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
Construction business challenges:

1. Very diverse (and fragmented) value chain
2. Short term profit focus
3. Very long term value creation
4. Access to finance
5. Lots of stakeholders: clients, users, society
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.

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.

Consultants
Intermediary consultants can bring the different parties together.

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.

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 as long as possible.

Recycle
Materials recovered after a product’s end-of-life will replace the use of virgin materials.
So...

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

- Ideas are needed!
Kåre Stockholm Poulsen – 3XN
Heidi Merrild – AAA / Merrild Arkitekter
Nikolaj Callisen Friis – Lendager Group

Anne Beim – KADK / CINARK
Peter Andreas Sattrup – Danskeark.dk
Charlotte Algreen – Algreen Arkitekter

Presentation available at www.danskeark.dk