GLOBAL OPPORTUNITIES IN CIRCULAR CONSTRUCTION & INFRASTRUCTURE

FREEK VAN EIJK, HOLLAND CIRCULAR HOTSPOT
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HOLLAND CIRCULAR HOTSPOT
DUTCH CIRCULAR SOLUTIONS FOR GLOBAL CHALLENGES

Companies

Knowledge Institutions

Government Cities

EXCHANGE KNOWLEDGE AND INNOVATION

EXCHANGE GOVERNMENTAL BEST PRACTICES

EXPORT PRODUCTS AND SERVICES

‘HCH connects and accelerates the transition to a CE’

SHARING INNOVATION
In the EU, current construction and demolition (C&D) waste accounts for approx. 25-30% of the total waste. (Several sources, e.g. EEA 2015; Material Economics 2018)

Offices are empty 60 % of time. (GSA Office of Governmentwide Policy 2011)

67 % of global greenhouse gas emissions are related to material management. (UNDP 2017)

Only 9,1 % of the global economy’s materials remain in circulation. (Circle Economy 2018)

The building sector is the largest energy consuming sector, accounting for over one-third of the final global energy consumption.
With an estimated 75% of global infrastructure by 2050 yet to be built, particularly in Asia and Africa, cities have both a great responsibility and opportunity to transform their built environment.

70% of buildings in India are yet to be built.

SELECTED GLOBAL CHALLENGES & OPPORTUNITIES

China’s Belt & Road Initiative is the largest connectivity programme on infrastructure in the world.

Nordics
Biobased materials/buildings

Masdar (UAE)
Sustainable Cities

Singapore
Smart Cities

Resilient Cities

South Africa
African solutions for African challenges
Of the 30 world's fastest growing cities, 21 are in Africa.
CONSTRUCTION & INFRASTRUCTURE: PART OF A BIGGER PICTURE

TOPICS ARE LINKED, COMBINATIONS OF CIRCULAR BUSINESS MODELS ARE NEEDED

CIRCULAR CITY

A circular city is a resilient, healthy and competitive; able to provide for all the societal needs of its citizens within the natural boundaries of the Earth. Core elements of circularity are embedded within each key urban system; from water, to housing and infrastructure, to food and nutrition. Much like a circular economy, in a circular city, resources are kept at their highest potential for as long as possible, through sharing, reusing, repairing, re-manufacturing and recycling. Circular cities are innovation hotspots where new ideas are tested and scaled to create a truly inclusive, healthy and shining place for all.

HOUSING & INFRASTRUCTURE

Circular housing and infrastructure cannot be separated from the needs of our cities. Cities with circular housing and infrastructure are able to keep up with the demands of a growing population while also creating new and innovative models that enable sharing and reduce the need for personal cars and parking lots. Circular cities are powered by clean and renewable energy.

MOBILITY

Circular cities: Circular mobility with shared vehicles and electric charging stations can reduce the need for personal cars and parking lots. Transport infrastructure should be seen as an opportunity to create more comfortable areas for walking, cycling and other low-carbon forms of transport.

FOOD

Circular cities: Circular cities will see less waste and more efficient food systems. Circular cities: Circular cities will see less waste and more efficient food systems.

ENERGY

Circular cities: Circular cities will see less waste and more efficient food systems.

WATER

Circular cities: Circular cities will see less waste and more efficient food systems.
SUPPORT FROM GOVERNMENT WILL BE NEEDED

GOVERNMENT: INSTRUMENTS THAT CREATE FERTILE GROUND FOR CE SOLUTIONS

CIRCO
creating business through circular design

PUBLIC PROCUREMENT FOR A CIRCULAR ECONOMY
Good practice and guidance

EPR

PLASTIC BAGS

TAX

SUSTAINABLE DEVELOPMENT GOALS

INTERNATIONAL GREEN DEAL
North Sea Resources Roundabout

SHARING INNOVATION
CE: OPTIMIZING OVER TOTAL LIFETIME

DESIGN: SOURCING AND CONSTRUCTION

- Starting point circular design
- Avoidance
- Replacing ‘finite’ materials by renewable ones
- Using renewable / decentral energy
- Repulsing toxic content
- Eliminating waste
CE: OPTIMIZING OVER TOTAL LIFETIME
DESIGN AFTER PROJECT DELIVERY

- Design task extended to total lifetime
- Design anticipating on / taking responsibility for
  - re-use of materials and products
  - easy repair
  - effective facility services
  - adaptations / function changes
- Using circular systems and business models

LONGER USE -> REUSE -> REMANUFACTURE -> RECYCLING

USER -> COLLECTION -> REMANUFACTURER -> RECYCLING -> LANDFILL/ INCINERATOR

USE | END OF LIFE
NL: PRIORITY SECTOR CONSTRUCTION

RIJKSWATERSTAAT
VENLO C2C CITY HALL
C2C INDUSTRIAL PARK 2020
WATER SQUARE VAN BENTHUM
BUIKSLOTERHAM
NL: PRIORITY SECTOR CONSTRUCTION

SMART ROOF 2.0
DENIMTEX WALL COVERING
MODULO CONTAINER PARK
THE MOBILE FACTORY
SMART CRUSHER
MADASTER MATERIAL PASSPORT

SHARING INNOVATION
AFFORDABLE & RESILIENT BUILT ENVIRONMENTS
SOLUTIONS FOR DEVELOPING COUNTRIES

• Modular units made from local, recycled and grown materials which can be self-assembled to upgrade informal settlements
• Combining local material, indigenous knowledge and new techniques to create zero waste construction
• Integrating and enhancing circular economy approaches within the informal economy
• Building regulations and enforcement, public private agreements

Framework for long-term planning considering local changes in climate, materials and technology, water supply, regulations, a.o.

Bridging the gap: breaking down the process at a technical level

Responding to the needs of informal construction

Involvement/activation of private sector

Self-build bio composite components and kits

Indigenous material innovation

Modular units made from local, recycled and grown materials which can be self-assembled to upgrade informal settlements

Combining local material, indigenous knowledge and new techniques to create zero waste construction

Integrating and enhancing circular economy approaches within the informal economy

Building regulations and enforcement, public private agreements
• Fact Finding mission Circular Economy California, June 24-28
• Business Meetings Grand Paris Express, infrastructure, June 27, Paris
• Trade mission to Nigeria, agri-food and sustainable cities, Lagos, 9-12 July
• OECD Roundtable Circular Economy in Cities and Regions, Paris, July 4
• Expo 2020, Dubai, 20 October 2020

• Scaling up Circular Economy in Cities - WCEF side session, Helsinki, June 3
• Smart Cities New York International Conference, NY, May 13-15
• Retrospective Circular - Round Table Sessions, presentation NL-Works: 'Vluchtelingenkampen en CE', the Hague, April 11
• Doing business with the United Nations - Innovation for emergency aid and reconstruction, the Hague, March 28
Call for information Circular solutions Africa

- Rapid urbanization in Ghana, Ivory Coast, Jordan, Lebanon, Morocco, Nigeria and Senegal causes social problems and asks for circular solutions for building, waste management etc.

- Ministry of Foreign Affairs intends to challenge Dutch organizations through a Small Business Innovation Research (SBIR) to come up with innovations for these issues.

- CALL: Help the ministry to shape the challenge and fill in the questionnaire [https://nl.surveymonkey.com/r/2TFPK8M](https://nl.surveymonkey.com/r/2TFPK8M)

[www.rvo.nl/subsidies-regelingen/sbir](http://www.rvo.nl/subsidies-regelingen/sbir)
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Countries Representation by Population number