# BEYOND2020 NOV 2-4

WORLD SUSTAINABLE BUILT ENVIRONMENT ONLINE CONFERENCE

**Special Track:**
Circular built environment
– a global perspective

4 November 2020

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# State of play for circular built environment

Pekka Huovila

SPECIAL TRACK 4 - Circular Transition in the Global South - Learnings from North, East and West

# We are One Planet

- An implementation mechanism of Sustainable Development Goal 12
- The One Planet network: a multi-stakeholder partnership for sustainable development
- A network that leads the shift to sustainable consumption and production (SCP) providing unified and coherent direction, tools and solutions

700+ Programme Partners

National Focal Points from 130+ countries

Sustainable Food Systems PROGRAMME

Sustainable Lifestyles & Education PROGRAMME

Sustainable Buildings & Construction PROGRAMME

Consumer Information PROGRAMME

Sustainable Tourism PROGRAMME Committed to drive the change

Sustainable Public Procurement PROGRAMME

# SBC Multi-stakeholder Advisory Committee (MAC)

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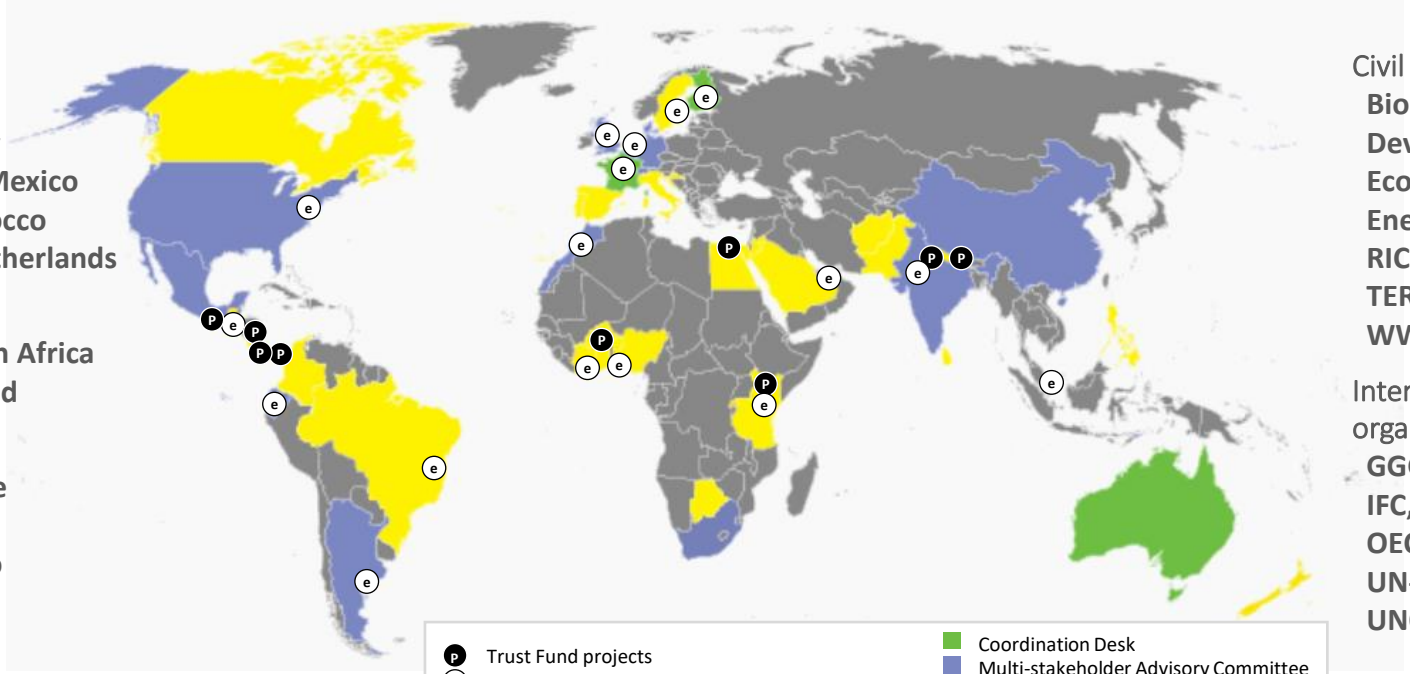
Governments
- **Argentina**
- **GIZ, Germany**
- **SEMARNAT, Mexico**
- **IRESEN, Morocco**
- **RWS, The Netherlands**

Industry
- **GAUGE, South Africa**
- **Sweco, Finland**

Academia
- **AMUE, France**
- **CABR, China**
- **UPF, Morocco**
- **YALE, US**




Civil society
- **Bioregional, UK**
- **DevAlt, India**
- **Ecosur, Nicaragua**
- **Energies2050, France**
- **RICS, Belgium**
- **TERI, India**
- **WWF, US/Sri Lanka**

Intergovernmental organizations
- **GGGI, South Korea**
- **IFC, US**
- **OECD, France**
- **UN-Habitat, Kenya**
- **UNOPS, Denmark**

Coordination Desk

Ministry of the Environment Finland

RMIT UNIVERSITY

UN environment

+ over 100 Partners from almost 50 countries

One planet
build with care

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# 12 Core SDGs

SDG17 Partnerships

SDG1 Poverty

SDG15 Biodiversity

SDG3 Health

SDG4 Education


SDG13 Climate

SDG6 Water

SDG12 SCP

SDG7 Energy

SDG11 Cities

SDG8 Employment

SDG9 Industry

Credits:
SDG Good Life Goal Emojis
https://sdghub.com/goodlifegoals/
Illustrations: Ninni Westerholm
Pictures: Pekka Huovila

# Circular built environment highlights

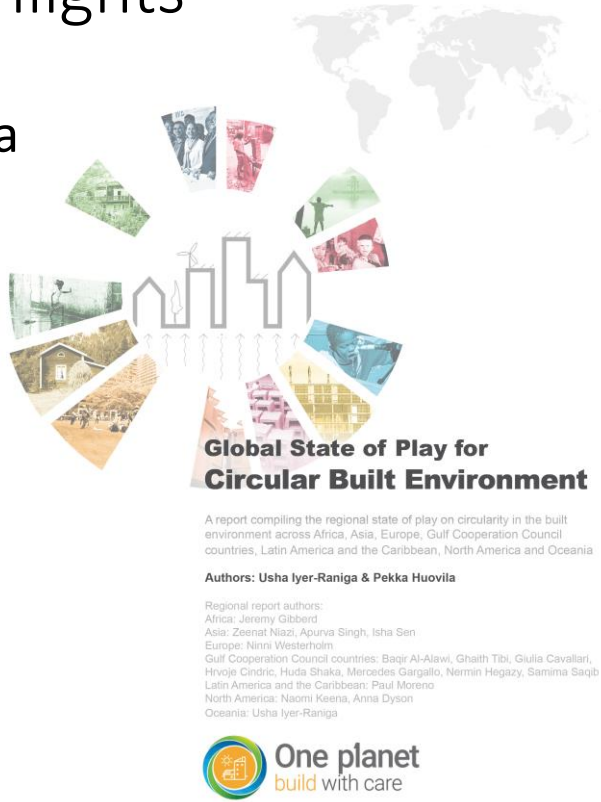
- **Asia**: Zeenat Niazi, Development Alternatives India
- **Africa**: Dr. Jeremy Gibberd, GAUGE South Africa
- **Latin America**: Paul Moreno, Cooperative Ananda Ecuador

**Global conclusions and recommendations**

- Prof Usha Iyer-Raniga, RMIT University Australia

**Discussion**

- Next steps



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# Circular Built Environment (Asia)

Zeenat Niazi

SPECIAL TRACK 4 - Circular Transition in the Global South - Learning from North, East and West

# Asia Context - Challenges and Opportunities

- **Geographical / climatic context –** diversity and vulnerability
- **Development context –** disparity, demand, access and quality issues in shelter persist for the poor
- **Growth trends –** rapidly urbanizing, greenfield as well as transforming brownfield trends, yet over 50% rural
- **Cultural context –** rich vernacular traditions of bio-mass, stone and masonry
- **Human capacity context –** Large construction workforce, largely informal and unskilled, job creating sector
- **Economy trends –** industrial activity and large agriculture base
- **Resource status –** Stress on minerals and soils, new secondary resource streams from wastes, abundant biomass resources
- **Policy situation –** guidelines and regulations exist but inadequate data and incentives for circular models

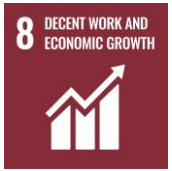
# Good Practices

**design** of building products | **manufacturing** – of products and construction technology | **building operations** – use of buildings and the built environment | **post life** – reuse as well as recycling of materials and building elements, re-use of construction debris

# Relevant SDGs / Indicators

## Action








**Primary**


virgin material & CO2 footprints

reduced critical materials & cross sectoral conflicts

new business models in repair, retrofit, recycling, sharing

green skills & jobs

new products & production systems using secondary & regenerative resources

life cycle & material flows, inclusion & affordability

## Impacts






**Secondary**

# Recommendations and Suggested Action


- **Research & Development**
  - Modular assembly based systems and bio-mass based regenerative products for future green field development
  - Cross sectoral industrial symbiosis – new secondary resource streams

- **Capacity Supports for Decision Making and Implementing Policy Measures**
  - Streamlined data systems, tracking SDG indicators, life-cycle and material flow assessment tools, product disclosures and public information
  - Standards, regulatory measures, incentives and capacity development to support resource efficiency, resource extraction and waste management policies

- **Mainstreaming Circularity and Scaling-up Good Practice**
  - Promotion of new business models and green skills in circular products, construction systems and services integrating the current workforce
  - Fiscal incentives, green financing, credit support and public procurement to boost supply and create markets for circular products, buildings especially affordable housing

# Summary

**Mantra for the region:** ***"less is more for more"***

- Circularity in building construction is an imperative to meet demand, respond to changes in materiality, reduce vulnerability and mitigate environmental impacts in a resource constrained Asia.
- Circular models need to respond to the diversity, job creation needs and greenfield & transforming brownfield contexts of the region.
- Integrating wastes as secondary resources re-engineering biomass and new modular systems are key opportunities.
- Challenges lie in the informality of the sector, poor data environment and low capacities for policy implementation and mainstreaming good practice.

# Thank You

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Development Alternatives

www.devalt.org

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# Circular Built Environments in Africa

Dr Jeremy Gibberd

SPECIAL TRACK 4 - Circular Transition in the Global South - Learnings from North, East and West

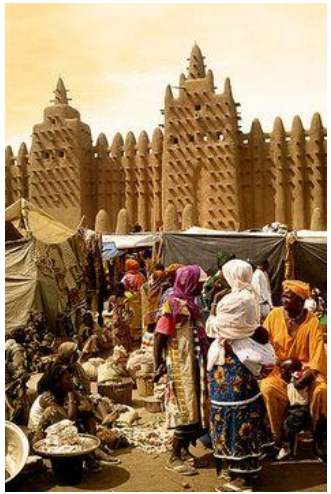
# Challenges: Informal settlements and rapid uncontrolled construction

- Rapid, poor construction.
- Out-of-date regulations.
- Poor quality buildings, collapses.
- Demolition waste.

- Need for:
- Building regulations which create long-life, high quality buildings.
- Affordable bio-based building systems

BBC, borgenmagazine

# Opportunities: Hybrid construction materials and techniques



- Low cost, low energy, comfortable, flexible, repairable, no waste buildings that can be easily built locally.
- Combine local materials and indigenous knowledge with new products and techniques.
- Create local jobs and enterprises.

- School in Kuruman, South Africa.
- Used compressed earth. technologies as catalyst for local development.

# Support: Circular building product standards and local content procurement

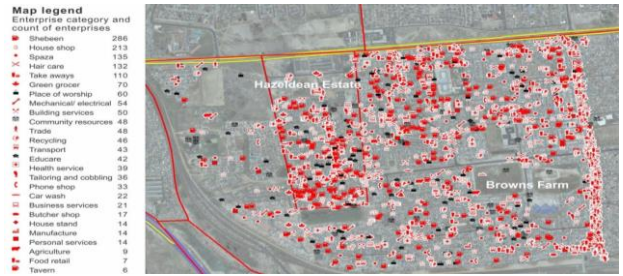


- Local standards that support circular approaches.
- Government procurement budgets used to support the local economy.
- Supports local enterprises and jobs.

- SABS 1286 standard on local content.
- South Africa's Industry Policy Action Plan (IPAP).
- Zambia's Green Jobs Programme.

Green Jobs Programme, Gibberd

# Transformation: Synergistic circular systems for sustainable neighbourhoods




- Existing informal systems are efficient and circular.
- Build on these at a neighbourhood level to create synergistic circular, high impact solutions and enterprises
- Opportunities for circular built environments, food, energy, mobility, education, health, waste systems
- Plan, implement and governance by local people
- Local services and products support sustainable living and working patterns – leapfrog conventional solutions.

Sustainable Livelihoods Foundation, Gibberd

# Implementation Models



1. **Appropriate building regulations and standards:** Work with local professionals and officials on regulations and standards to create high quality, adaptable, long-life built environments.

2. **Circular economy products:** Develop local circular built environment products and manufacturing capacity, support through procurement.

3. **Hybrid buildings:** Combine local materials and skills with new technologies to create high-performance circular buildings.

4. **Enhance informal systems:** Recognise the value of the informal economy, refine to create inclusive circular systems.

5. **Capable neighbourhoods:** Use synergies to rapidly and affordably establish sustainable circular systems and enterprises.

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# State of play of Circular Economy in the built environment Latin America and the Caribbean

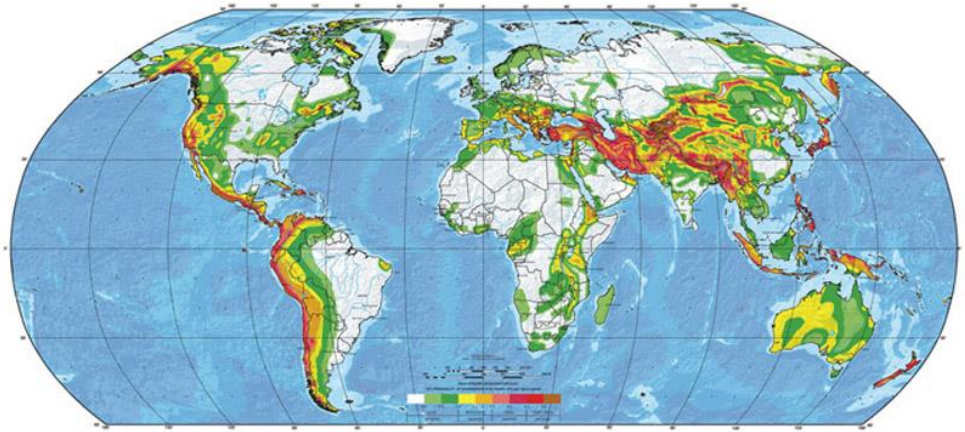
**Paul Moreno**

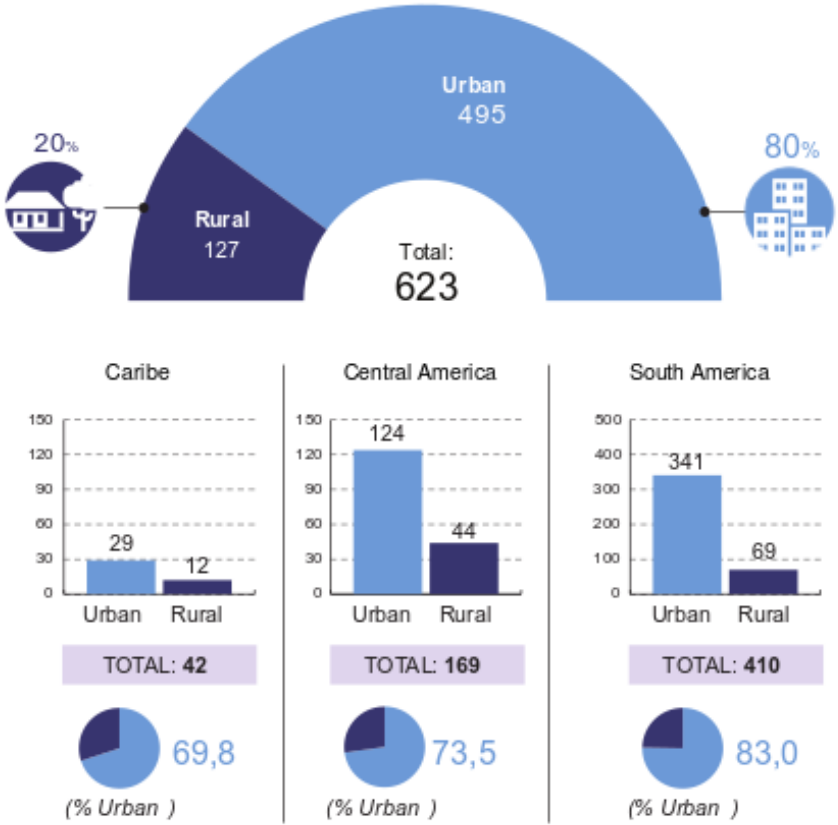
SPECIAL TRACK 4 - Circular Transition in the Global South - Learnings from North, East and West

# LAC - Challenges

Over 400 millon people will live in cities of 1 millon or more for year 2050.

Demand for resources (water, energy) and raw construction materials.





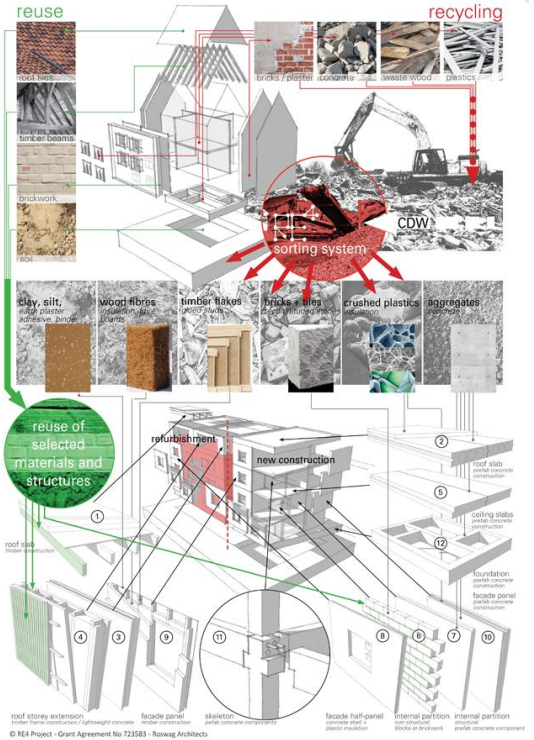

CEPAL
2017

# LAC - Opportunities

40% of the land in LAC region is suitable for cultivation.

Agricultural byproducts can be used as construction materials or energy sources as in biogas or hempcrete.

Top scientific research, like LC3 cement, is being developed and tested in LAC.




RE4 project


http://www.americanlimetechnology.com/

# LAC – Good practices.

CDW legislation for reuse and recycle:

| | |
|---|---|
| Brazil | 2002 |
| Mexico | 2004 |
| Argentina | 2004 |
| Ecuador | 2010 |
| Chile | 2005 |
| Colombia | 2005 |


Governments must coordinate with all stakeholders policies and incentives for reduction, recycle and reuse of CDW.

# LAC – SDGs and indicators

Water-use efficiency
CO2 emission
Financial support
Renewable energy share
National recycling rate
Material footprint
Wastewater safely treated
Reliance on clean fuels
Long-term strategies
Sustainable public procurement
Urban population living in slums
Installed renewable energy


Pekka Huovila

# Analysis and evaluation

Involvement of all stakeholders.

Government regulation.

Use of recycled materials.

Reduction of dumpsites.

Research & economic feasibility.

SROI.

Zero waste education campaigns.


Examples of the RE⁴ components: 01 – Concrete building blocks made of CDW mineral aggregate; 02 – Insulation panels made of CDW wood fibers; 03 – Reconstituted roof tiles made of CDW bricks and tiles

RE4 project

# Summary

About 1kg per day per person is produced and only 10% of the waste produced is recycled or recovered.

Open-air dumpsites are the rule and generate greenhouse gases and leachates, plus all the social impacts.

Lack of product lifecycle studies.

Base recyclers contribute between 25% and 50% of all recycled municipal waste collection.

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# State of play for circular built environment: Global

Presenter: Prof Usha Iyer-Raniga

SPECIAL TRACK 4 - Circular Transition in the Global South - Learnings from North, East and West

# Background

- ❑ Process
- ❑ Regional reports x 7
- ❑ Peer review
- ❑ Recommendations arising
- ❑ Comparisons using the SDGs
- ❑ Survey
- ❑ Workshops
- ❑ Way forward


Infograph: Ninni Westerholm

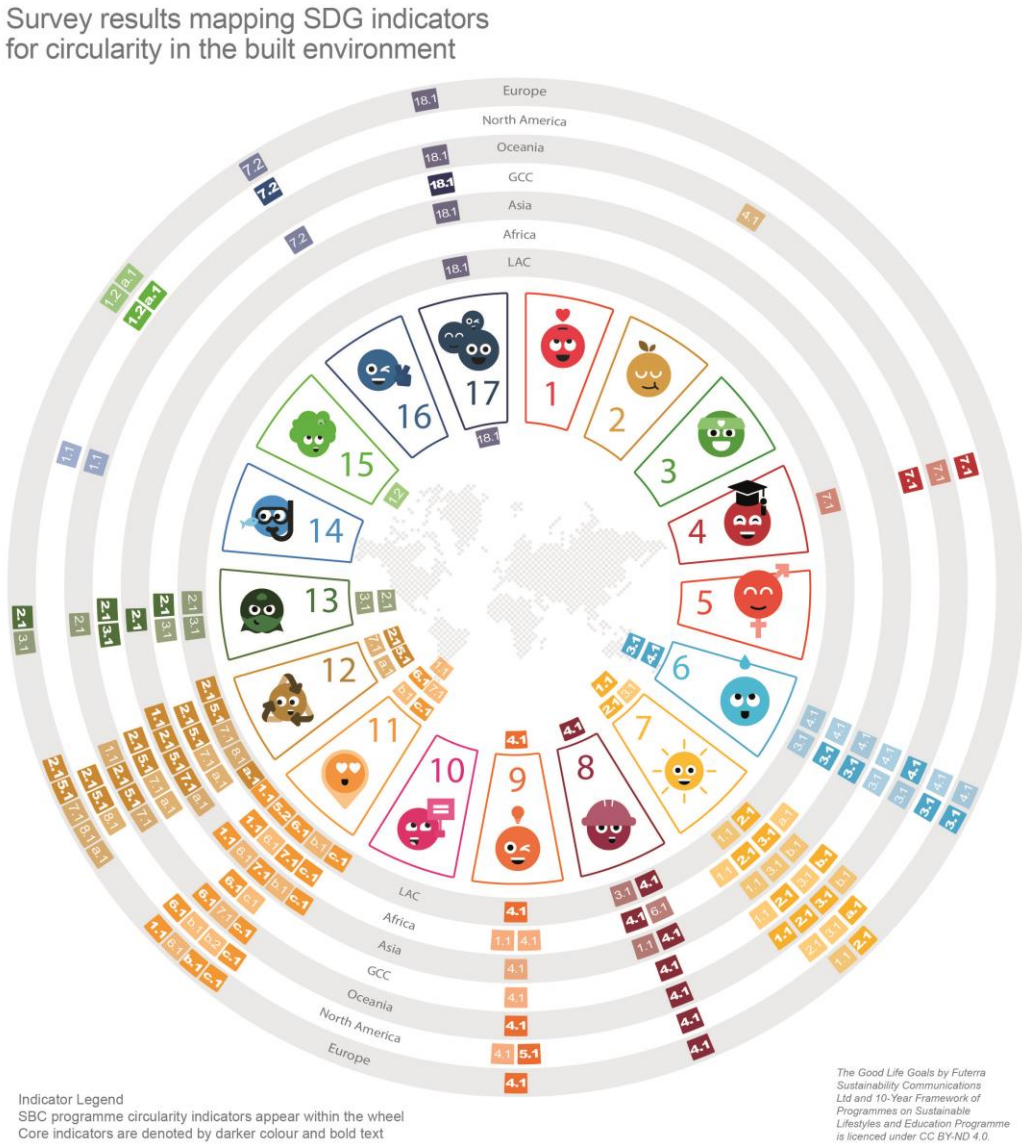
# Survey outcomes

- SDG house with core indicators
- 4 primary indicators:

  12.2.1/8.4.1, 12.5, 11.c.1

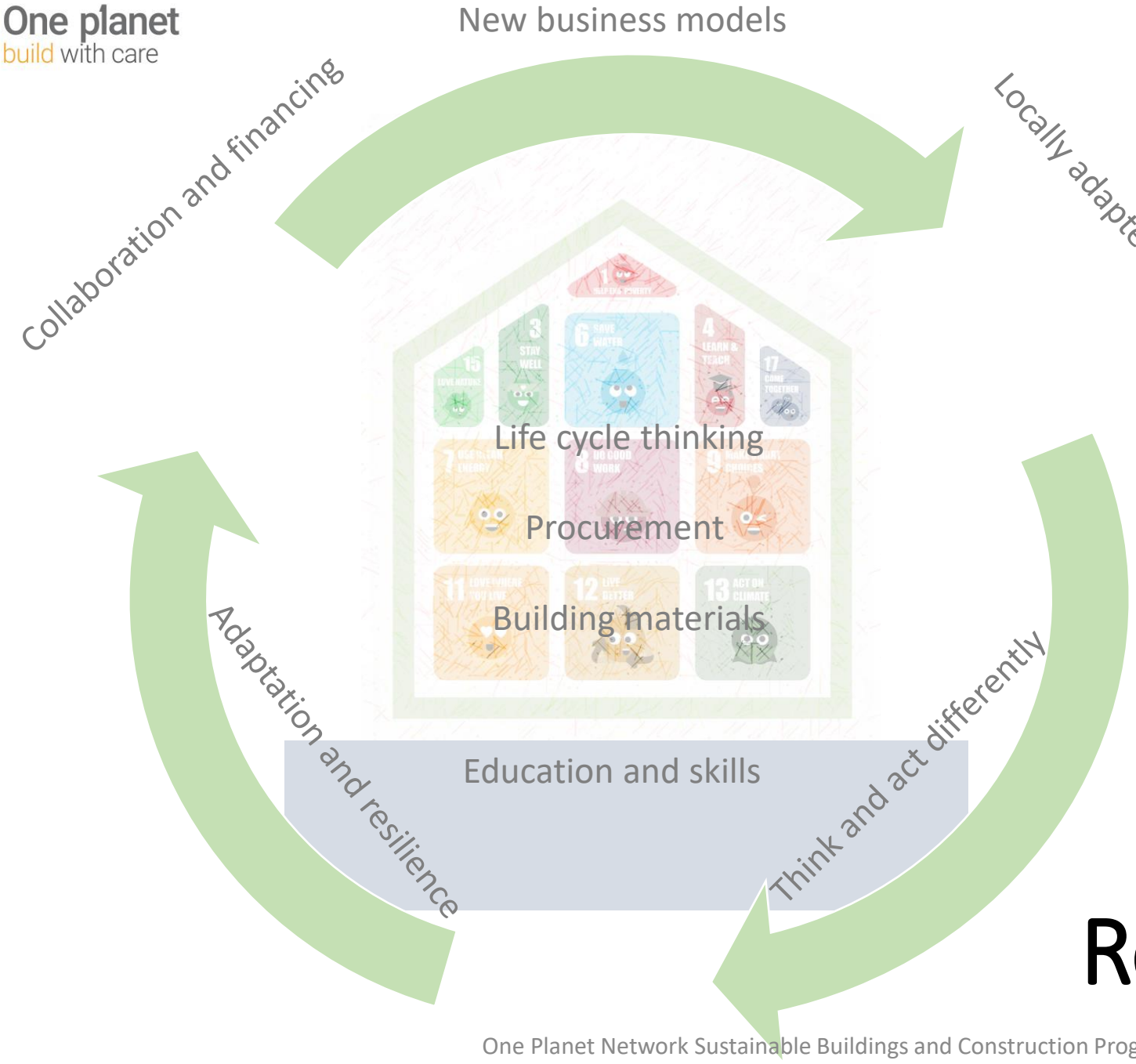
- 10 secondary indicators

  9.4.1, 11.6.1, 7.2.1, 6.3.1, 6.4.1, 7.1.2, 13.2.1, 12.7.1, 11.1.1, 12.a.1






Infograph: Ninni Westerholm




Monitoring and Reporting

# Ten Recommendations

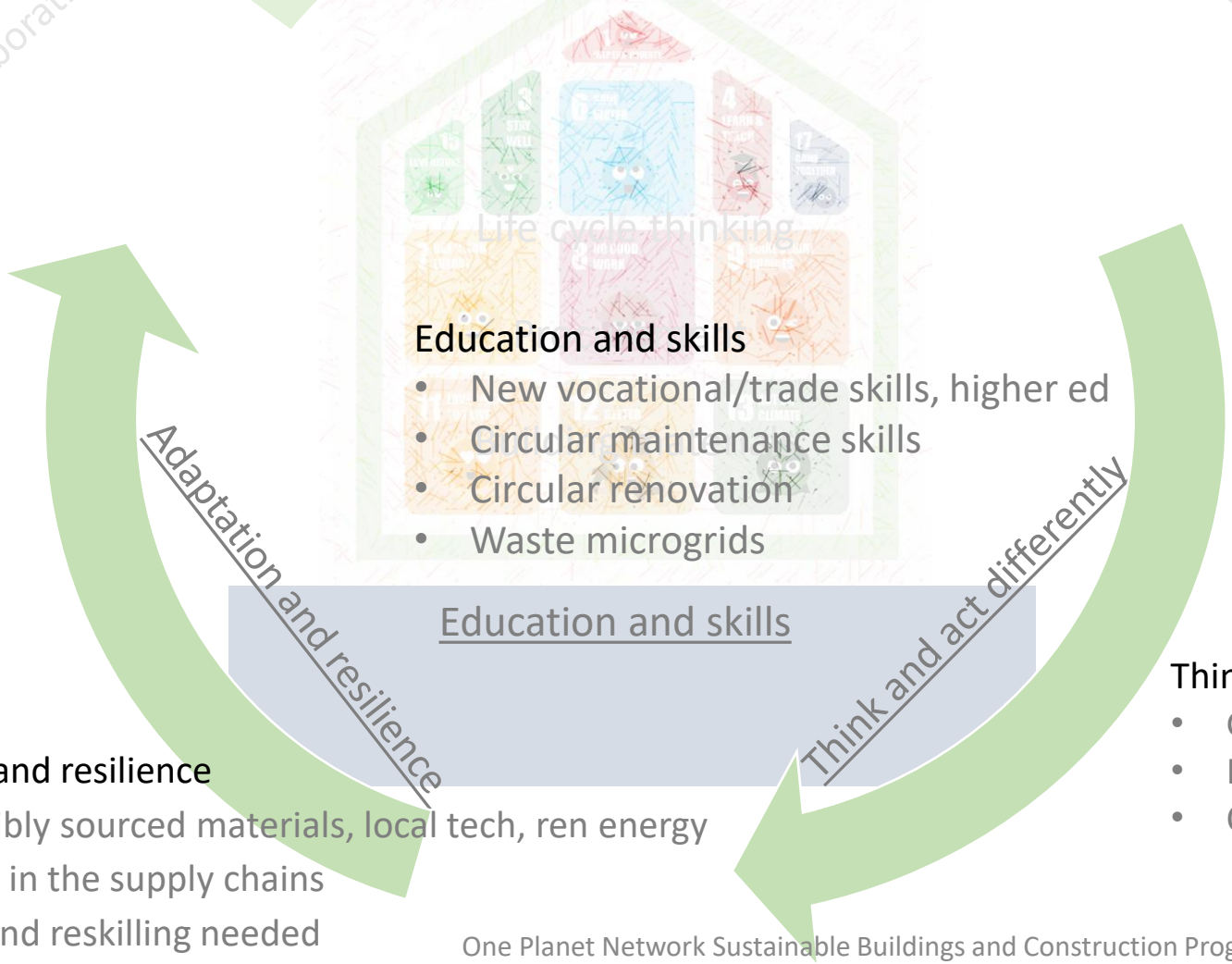
New business models

Collaboration and financing

Locally adapted solutions

Life cycle thinking

Monitoring and Reporting



Education and skills

- New vocational/trade skills, higher ed
- Circular maintenance skills
- Circular renovation
- Waste microgrids

Education and skills

Adaptation and resilience

Think and act differently

Adaptation and resilience

- Responsibly sourced materials, local tech, ren energy
- Diversity in the supply chains
- Skilling and reskilling needed

Think and act differently: linear to circular

- Government to lead
- Industry to innovate supply chain
- Clients and consumers

New business models

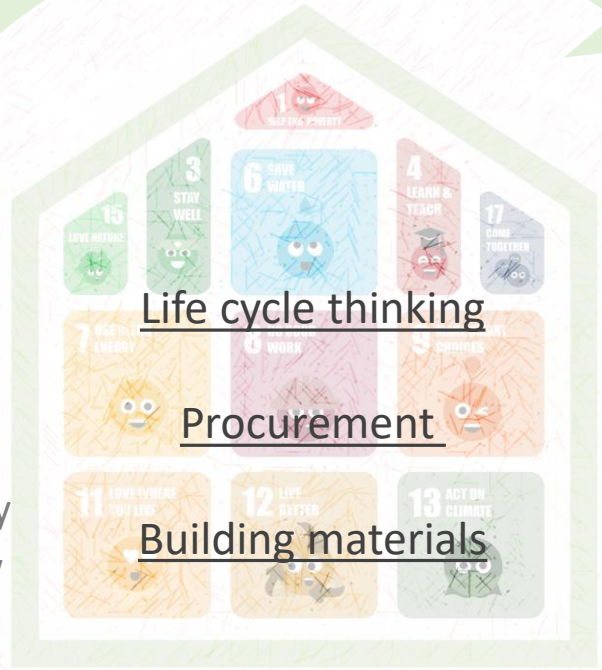
Collaboration and financing

Locally adapted solutions

Adaptation and resilience

Think and act differently

Education and skills



Life cycle thinking

Procurement

Building materials

Life cycle thinking
- Capital cost
- Operating cost
- Building footprint
- Up-skilling
- Green jobs and green skills

Monitoring and Reporting

Sustainable procurement
- Value add services
- New markets to be explored
- Repair and consider durability
- Collaborate to anticipate new standards and regulations

Building materials and waste
- Material reuse
- Bio-based materials

## New business models

### New business models and technologies

- From owning to sharing/renting
- New opp from green design and valuation
- New procurement models
- Building passports
- High value recovery products in renovation

Collaboration and financing

### Collaboration and financing

- Apolitical collaboration bet various stakeholders
- Changing existing practices with circularity in mind

Locally adapted solutions

### Local solutions and practices

- Local engagement and local knowledge
- Support economy, local jobs
- Multiplicity of solutions supporting local


## Monitoring and reporting

### Monitoring and reporting

- 12 SDGs out of 17
- SDG 12, 11, 13, 9, 7, 8, 6, 17, 3, 15, 4, 1
- Core indicators: 12.2.1/8.4.1, 12.5, 11.c.1
- 10 secondary ind:
  9.4.1, 11.6.1, 7.2.1, 6.3.1, 6.4.1, 7.1.2, 13.2.1, 12.7.1, 11.1.1, 12.a.1


Infograph: Ninni Westerholm

# Forward steps

- Survey continues
- Regional workshops
- Signature products
- NAPs and NDCs


## Further information

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