



Green  
Building  
Council  
Italia

27 settembre 2019

Economia  
Circolare  
in Edilizia

Relatore

Andrea Tassone - ARUP



Case history di edifici certificati con elevata  
circolarità

# ARUP

An Introduction to our Firm

We are truly global. From more than **90 offices worldwide** our **14,000 planners, designers, engineers and consultants** deliver innovative projects around the globe.

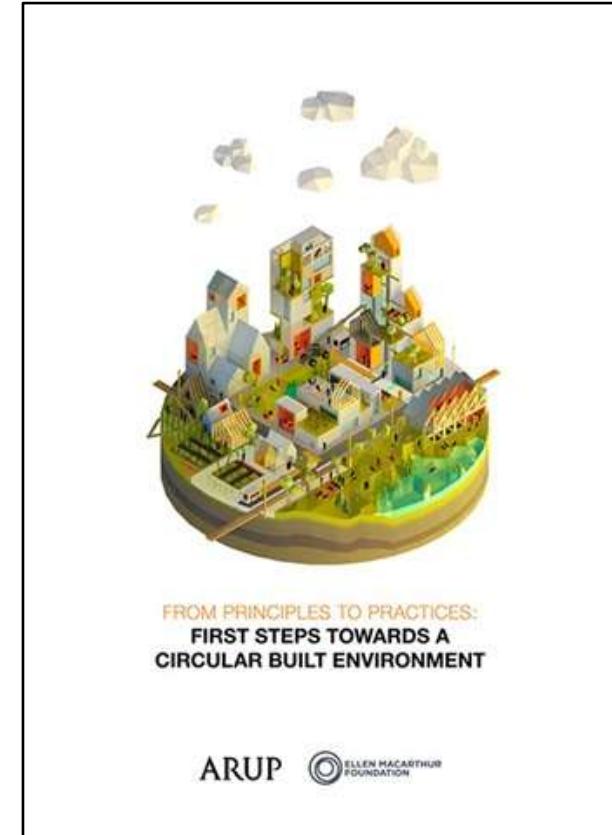
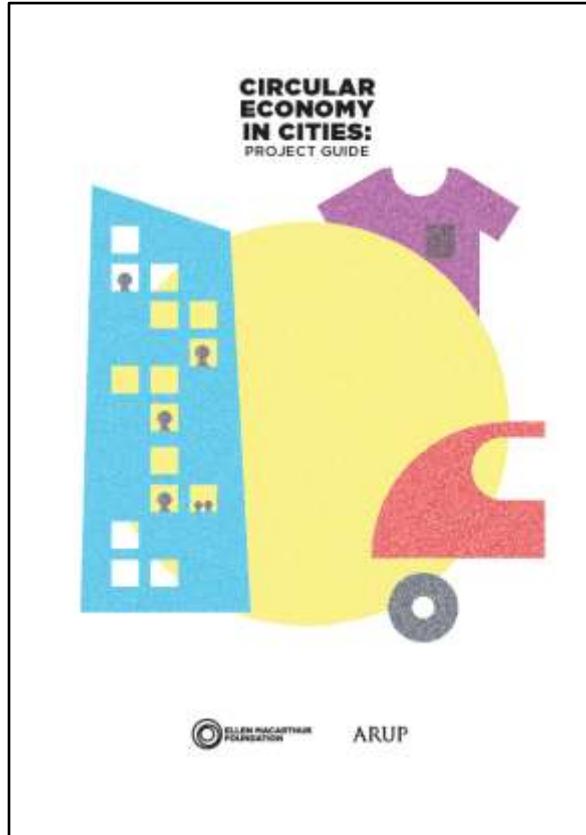


# Shaping a better world

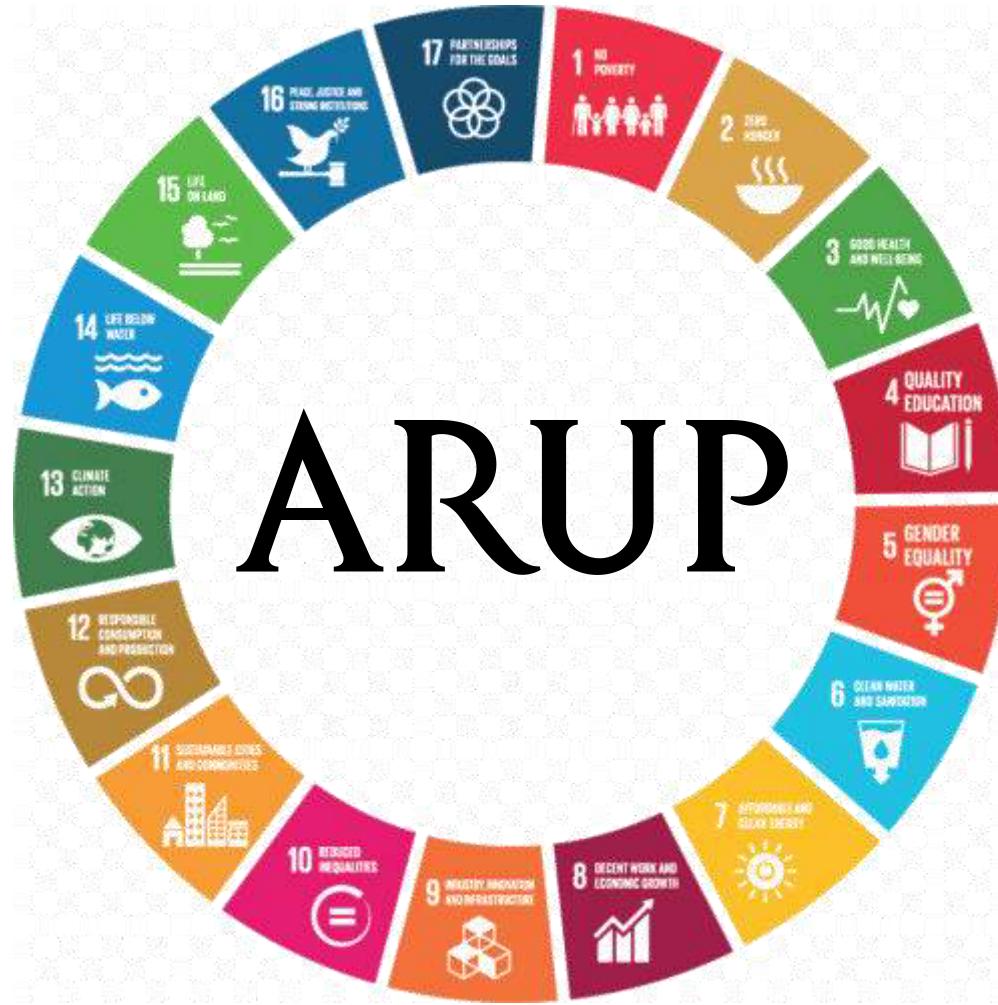
We help clients across the world to become more sustainable, while investing in research that can improve our own industry's environmental impact.



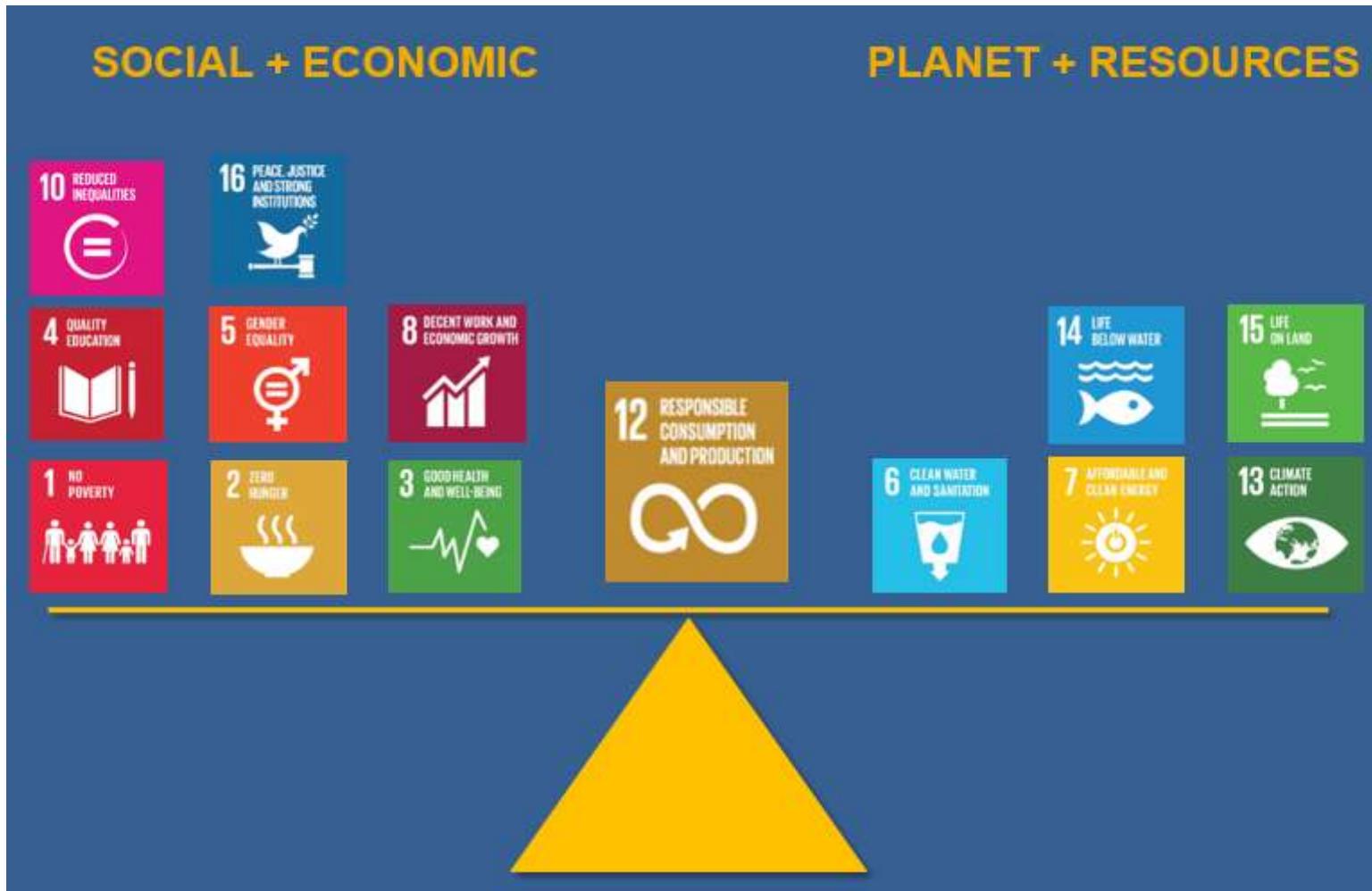
ARUP RESEARCH



SUSTAINABLE DEVELOPMENT IN ARUP



UN SUSTAINABLE DEVELOPMENT GOALS – GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION



## UN SUSTAINABLE DEVELOPMENT GOALS – GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION



**12.1 Implement the 10-year framework of programs on sustainable consumption and production**, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

**12.2 By 2030, achieve the sustainable management and efficient use of natural resources**

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

**12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse**

**12.6 Encourage companies**, especially large and transnational companies, to adopt sustainable practices and **to integrate sustainability information into their reporting cycle**

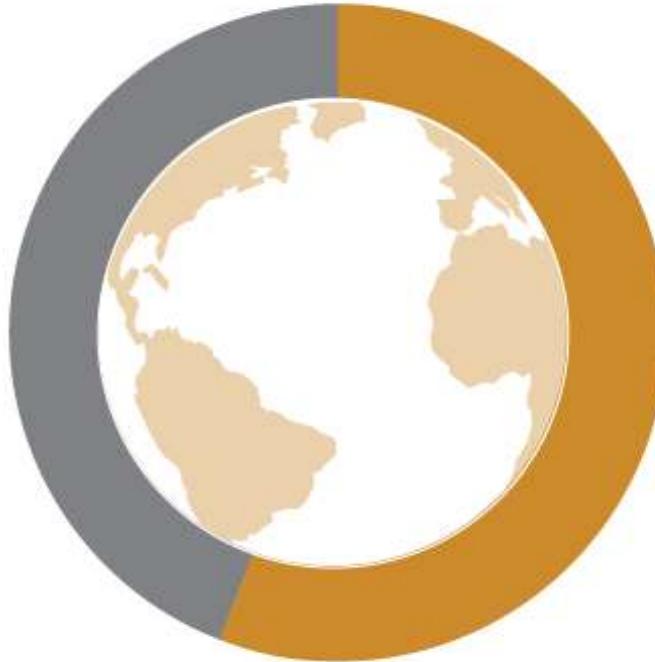
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.A Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

12.B Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

UN SUSTAINABLE DEVELOPMENT GOALS – GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION

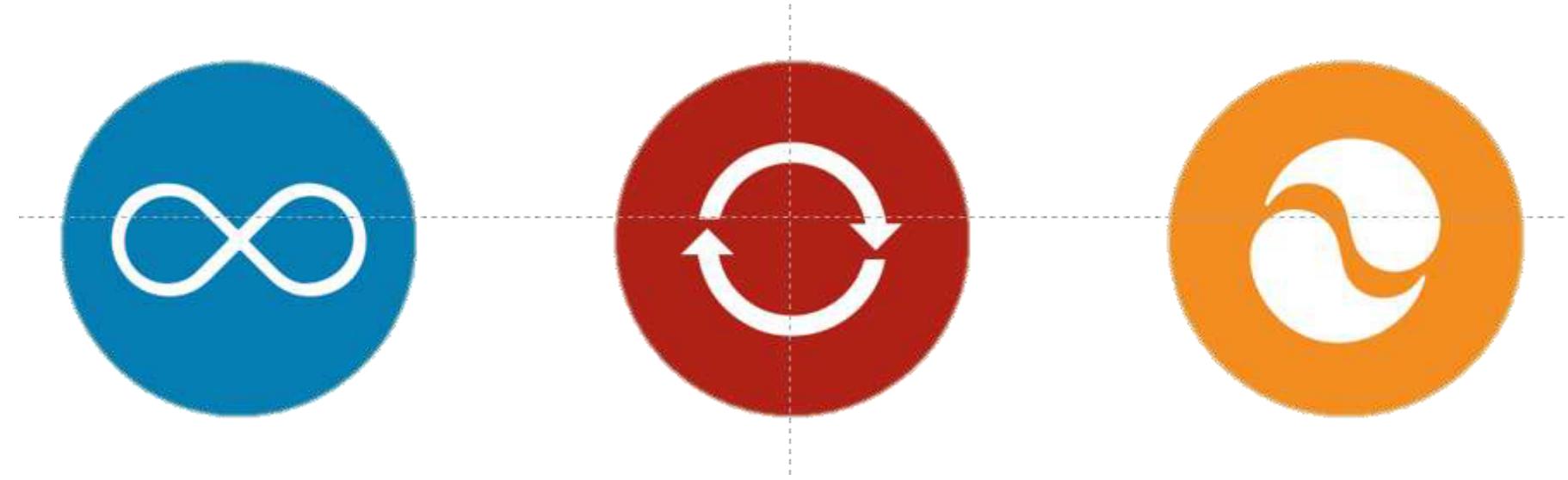


@UNStats

Globally by 2018,  
**108 countries**  
had national  
policies on  
sustainable  
consumption  
and production



Why the Circular Economy



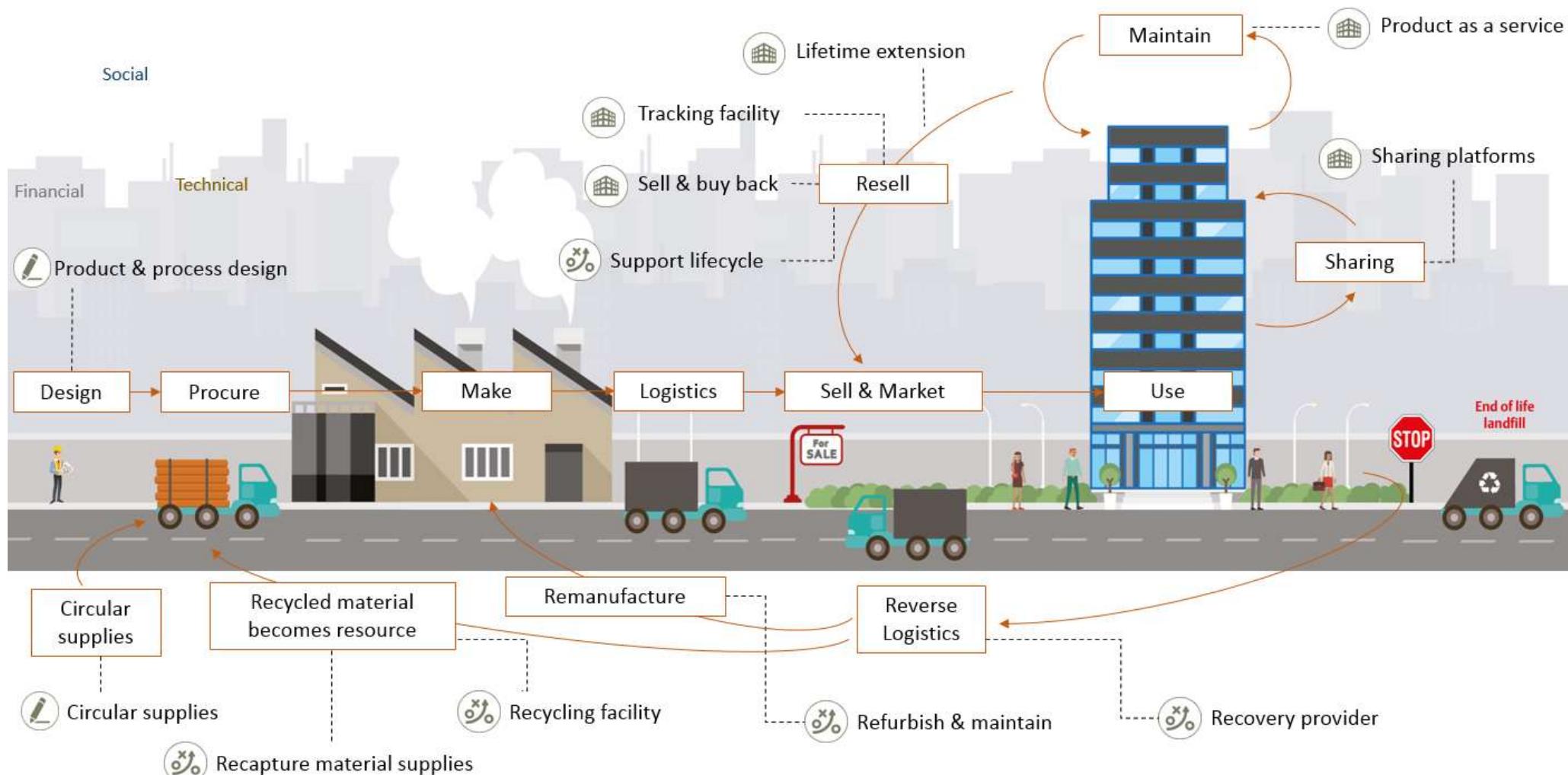
**DESIGNING OUT  
WASTE AND  
POLLUTION**

**KEEPING  
PRODUCTS AND  
MATERIALS IN USE**

**REGENERATING  
NATURAL  
SYSTEMS**

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### Circular Business Models for the Built Environment



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## BIQ HAMBURG – INNOVAZIONE PER EDIFICI CIRCOLARI NEAT-ZERO



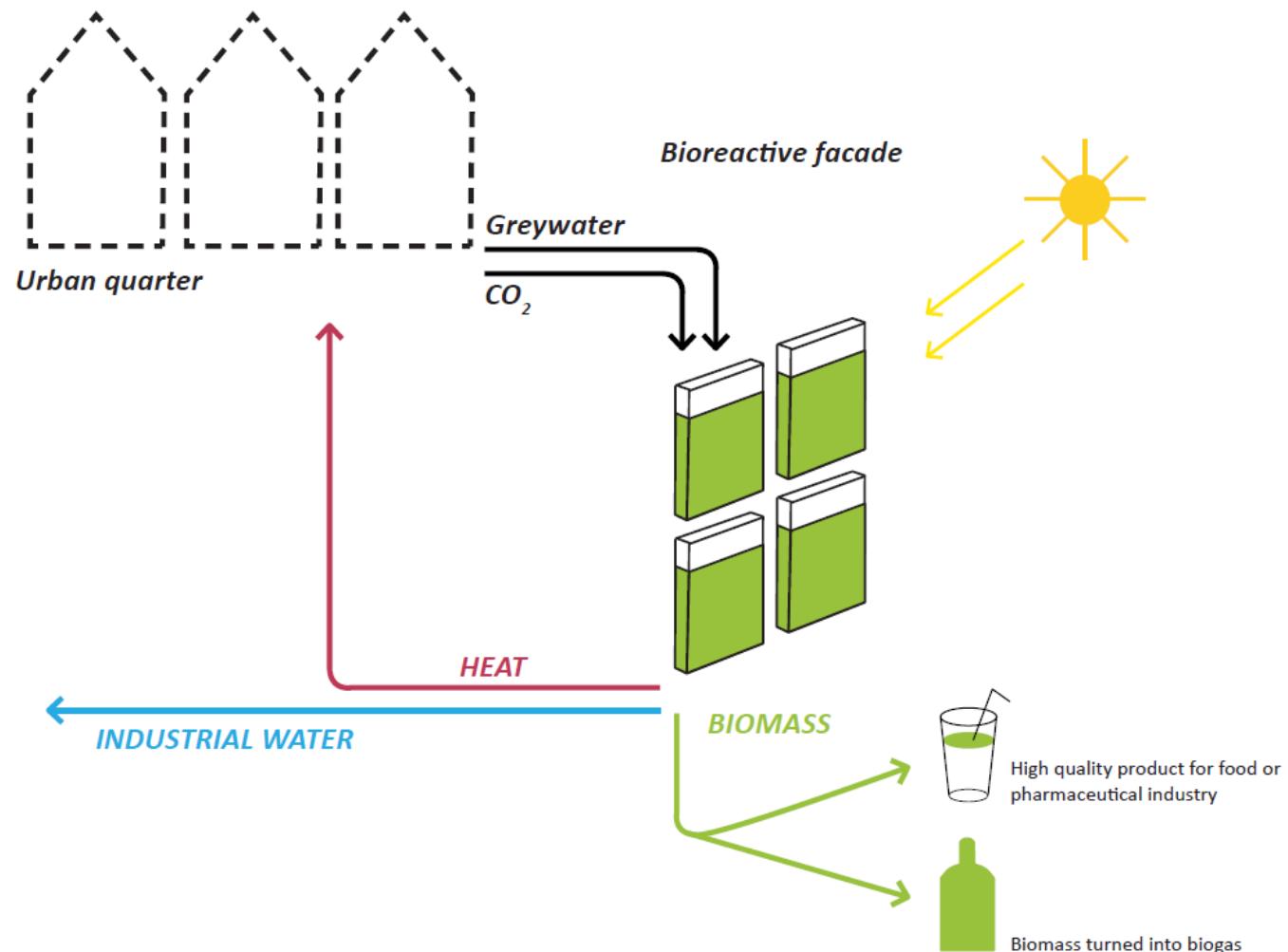
Case history di edifici certificati con elevata circolarità

## BIQ HAMBURG – INNOVAZIONE PER EDIFICI CIRCOLARI NEAT-ZERO



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### BIQ HAMBURG – INNOVAZIONE PER EDIFICI CIRCOLARI NEAT-ZERO



L'INNESTO – C40 REINVENTING CITIES



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L'INNESTO – C40 REINVENTING CITIES



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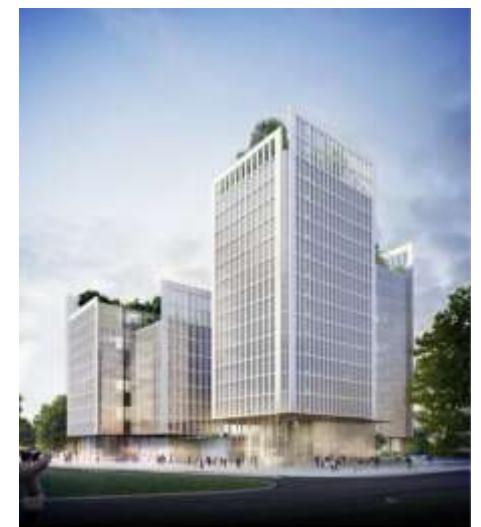
SEI MILANO



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### SEI MILANO



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### SEI MILANO

**C1**  
**MATERIALI CRADLE-TO-CRADLE**  
Es: Elementi riciclabili per facciata vetrata.  
Facciate composte a riciclabile e riciclabile in cellulosa, vetro.  
In% certificati: C2C e % acciaio materiali: C2C

**C2**  
**MATERIALI LOW CO<sub>2</sub> O A FILIERA CORTA**  
Es: Elementi composti per facciata vetrata, facciate composte a riciclabile e riciclabile, vetro  
In% certificati: DPE e % acciaio materiali: con DPE e > 100 tonf

**C3**  
**ISOLANTI INNOVATIVI**  
Es: isolanti di origine naturale o riciclabili  
In% certificati: FSC, AMAP-CEA, Recyclable e Isolai e % resistenza dei materiali di origine naturale: Isolai

**C4**  
**PREFABBRICAZIONE ELEMENTI STRUTTURALI**  
Piani e scale a prefabbricazione in tempi di costruzione  
Es: legno pilastri prefabbricati legno  
superficie coperti e sotto prefabbricato: legno

**C5**  
**PREFABBRICAZIONE INVOLUCRO RESIDENZIALE**  
Piani prefabbricati isolante e isolanti in cartone  
Es: piani prefabbricati legno

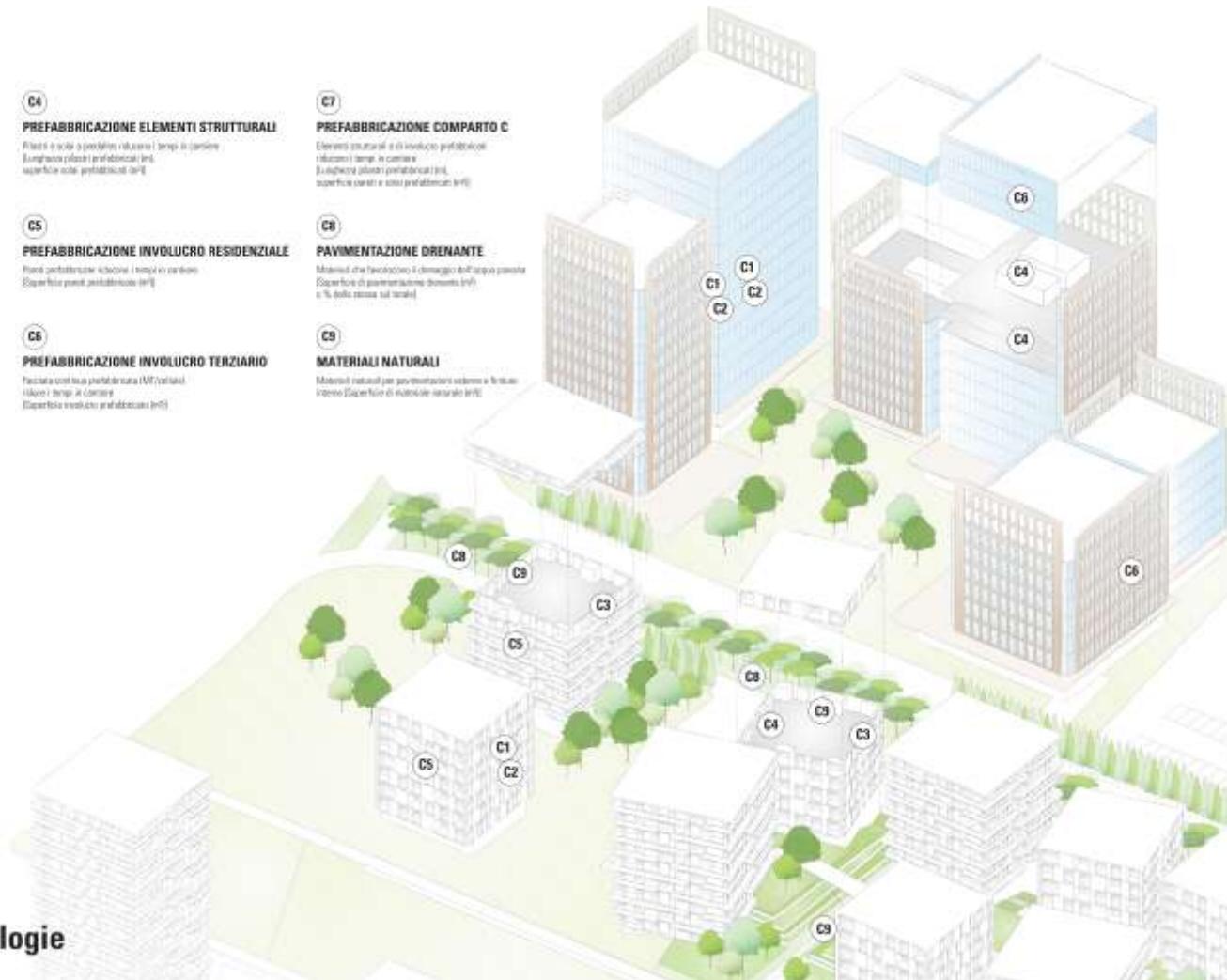
**C6**  
**PREFABBRICAZIONE INVOLUCRO TERZIARIO**  
Piani prefabbricati isolante e isolanti in cartone  
Es: isolanti prefabbricati legno

**C7**  
**PREFABBRICAZIONE COMPARTO C**  
Elementi strutturali e di isolamento prefabbricati  
isolanti e tempi di costruzione  
Es: legno pilastri prefabbricati legno  
superficie coperti e sotto prefabbricato: legno

**C8**  
**PAVIMENTAZIONE DRENANTE**  
Materiali che favoriscono il drenaggio dell'acqua piovana  
Es: pietre da pavimento autonome (legno) e % della rete sul terreno

**C9**  
**MATERIALI NATURALI**  
Materiali naturali per pavimentazioni esterne e rivestimenti  
Es: superficie di materiale naturale legno

DIAGRAMMA DI SINTESI  
**Materiali e Tecnologie**



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## PEOPLE PAVILION – COSTRUZIONE BASATA SUL RIUTILIZZO DI MATERIALI



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## PEOPLE PAVILION – COSTRUZIONE BASATA SUL RIUTILIZZO DI MATERIALI



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PEOPLE PAVILION – COSTRUZIONE BASATA SUL RIUTILIZZO DI MATERIALI



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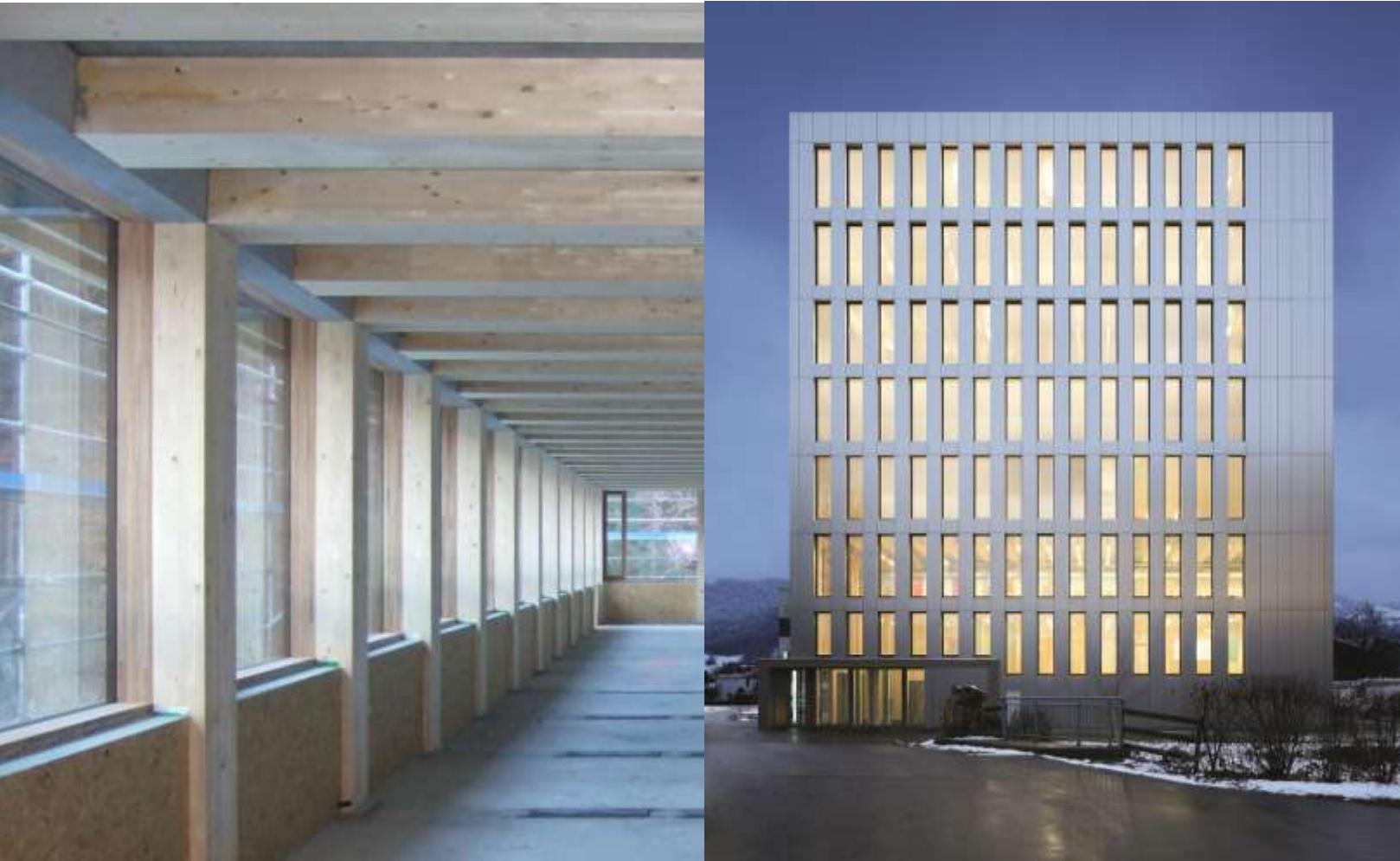
CIRCULAR BUILDING



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LIFE CYCLE TOWER – APPROCCIO CRADLE TO CRADLE



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Hy-Fi MUSHROOM TOWER



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### 3D HOUSING 05 – FABBRICAZIONE DIGITALE



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**Grazie per l'attenzione.**

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