



The role of precast in achieving Circular Construction

Industry's reduce, reuse & recycle

Think Concrete, Go Precast

bibm

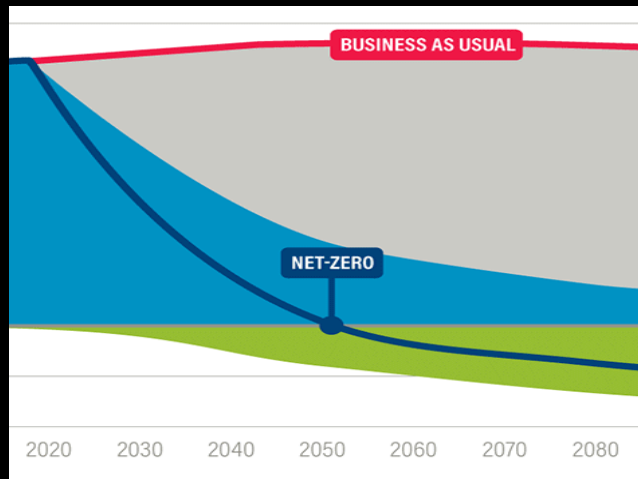
Alessio RIMOLDI
Secretary General

Final conference
20 January 2021

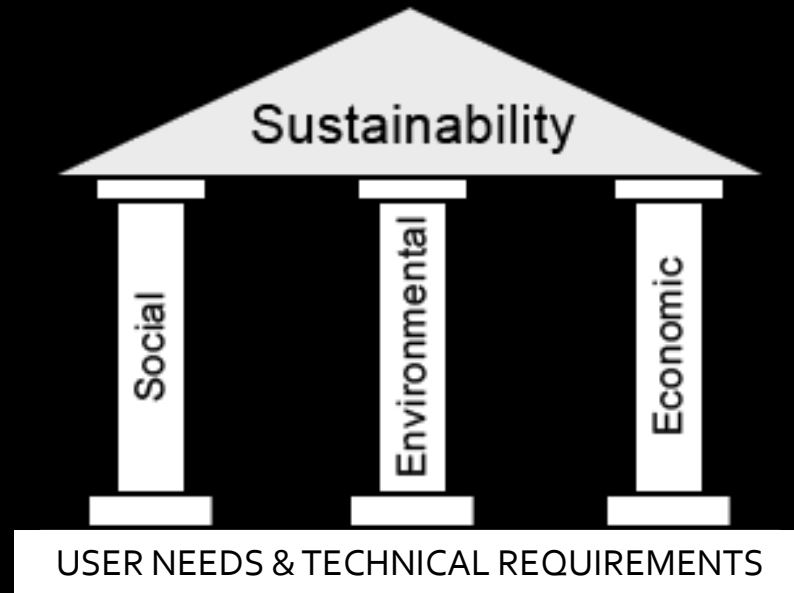


Construction 2050

Net zero carbon



Sustainable



Circular



Construction 2050

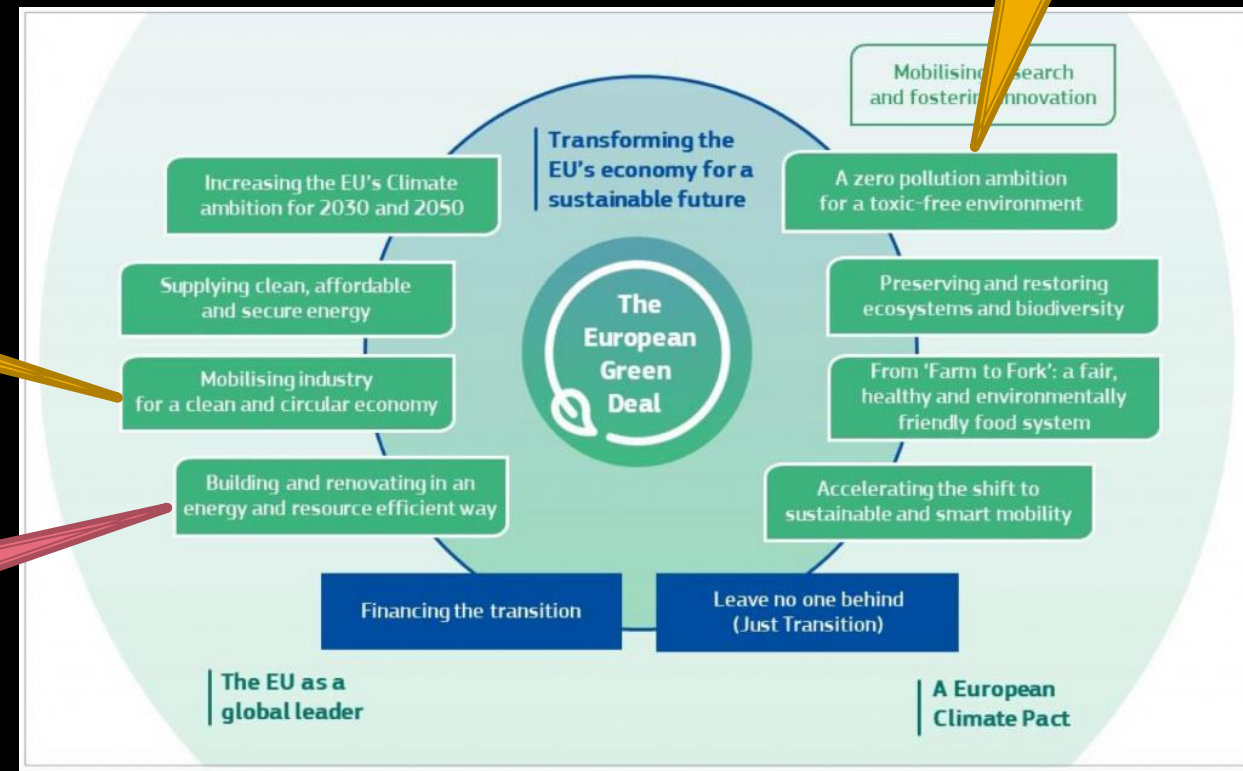
- Net zero carbon
- Sustainable
- Circular

Zero pollution

Green Deal

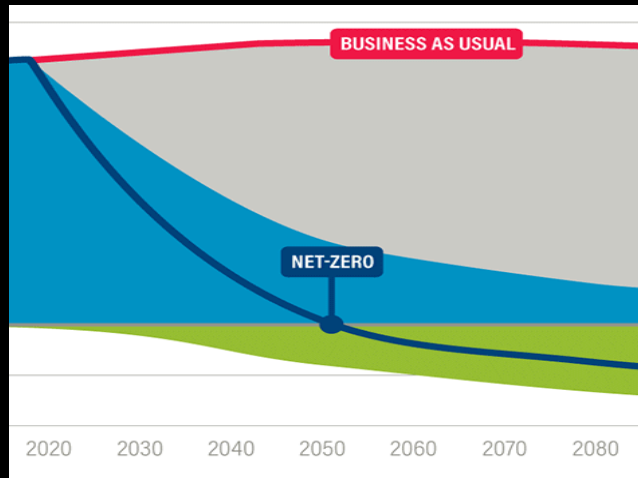
Clean and circular economy

Building in energy/resource efficient way



Construction 2050

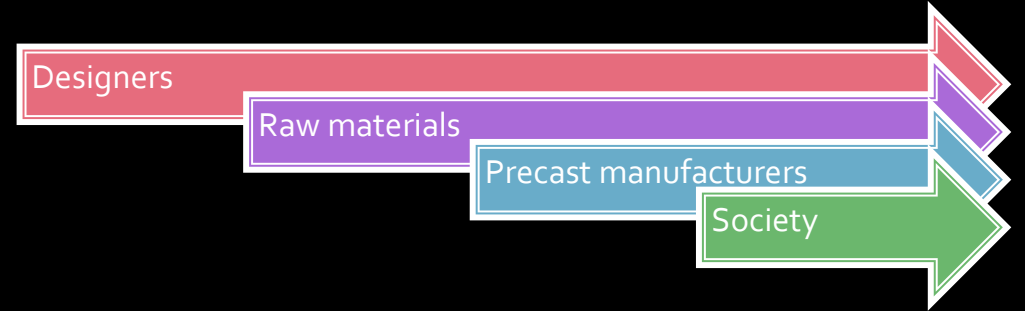
Net zero carbon



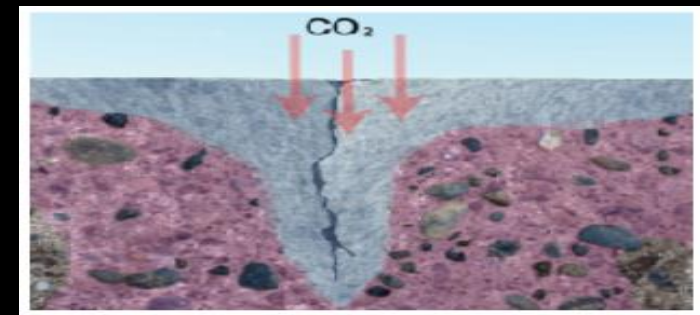
@ World Resources Institute



Engages in a transition towards **low-carbon** together with stakeholders



(INTERNAL) Carbonation

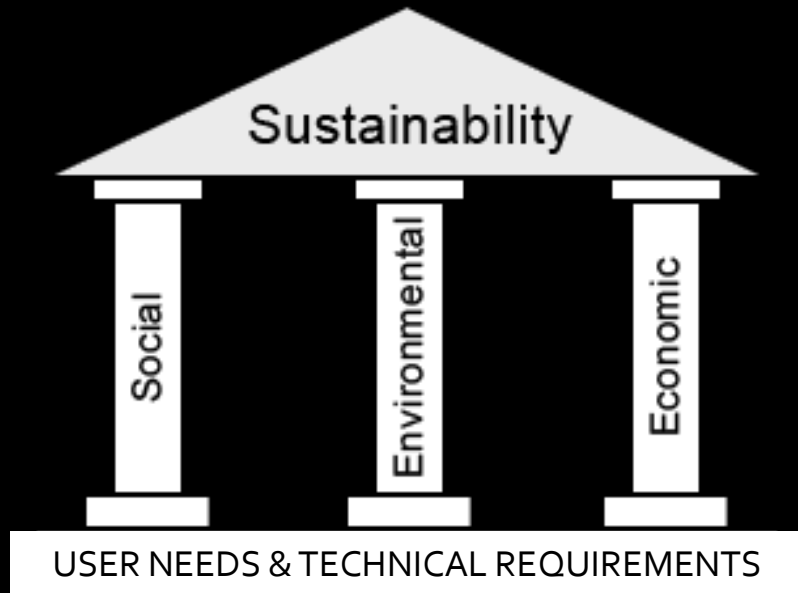


(EXTERNAL) Capturing CO₂



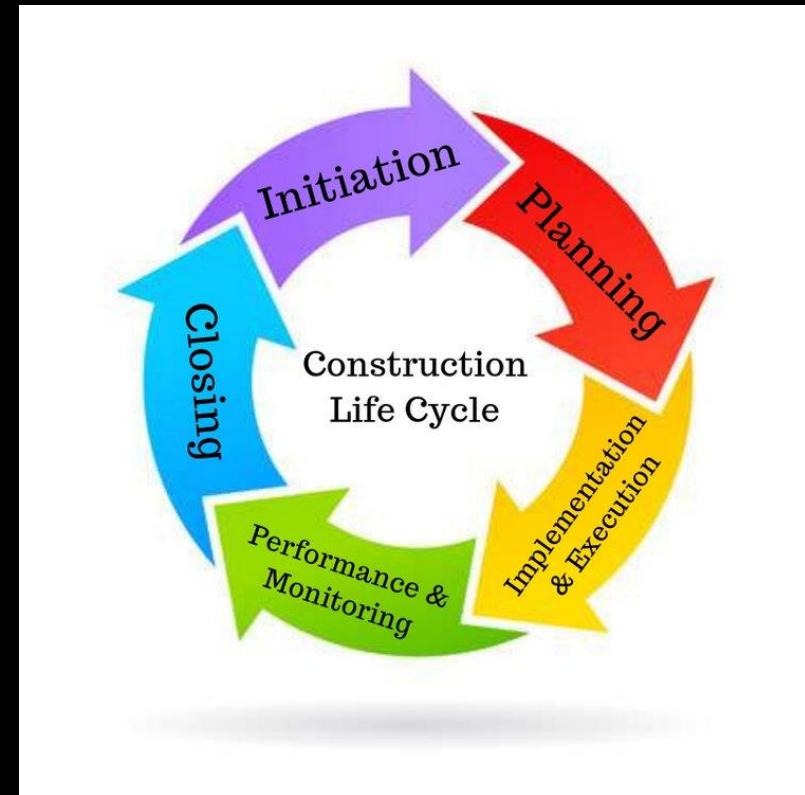
Construction 2050

Sustainable



HOLISTIC

Construction work



Whole life cycle

Construction 2050

Circular



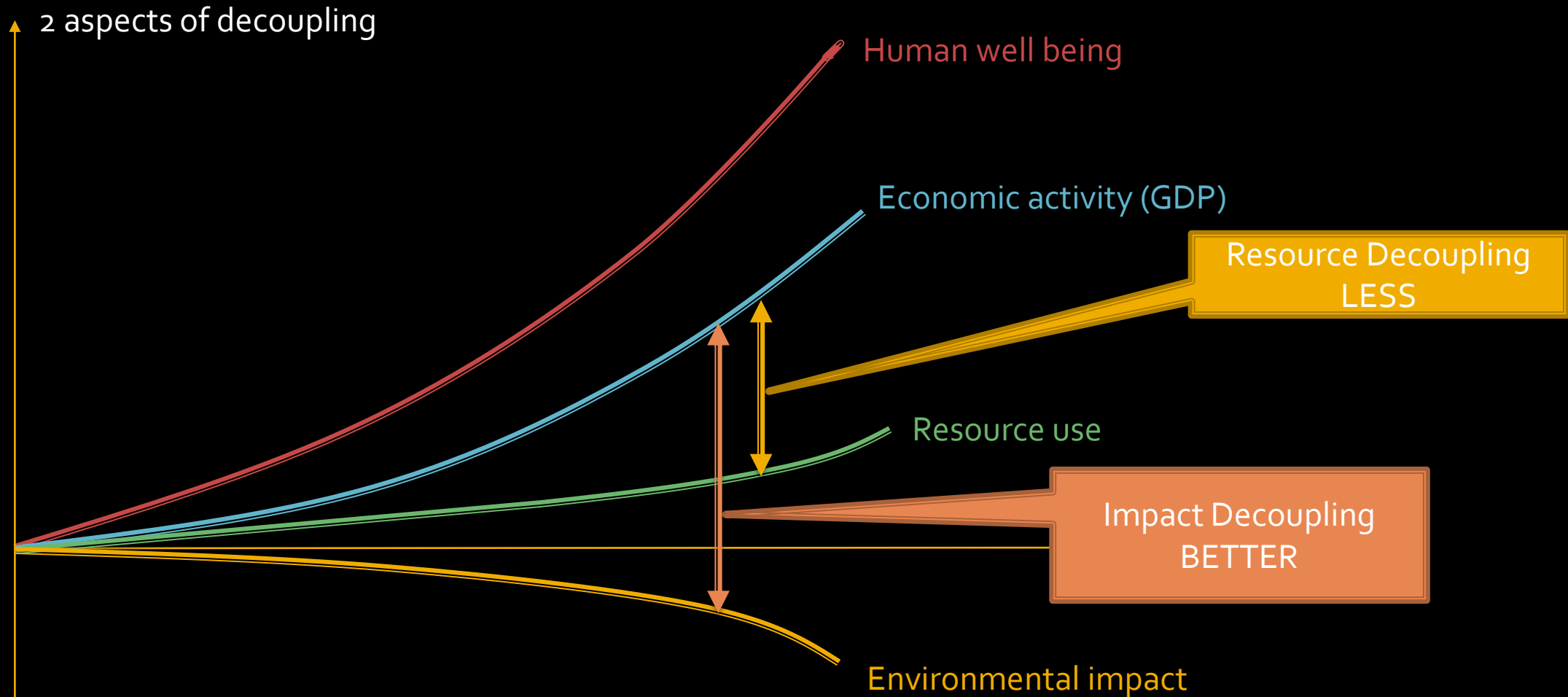
@ Ellen McArthur Foundation

Circular construction

The circular construction is a whole life approach to building activities aimed at securing **societal** development whilst preserving the **environment**.

It aims at **minimising** virgin **materials inflows** and **waste outflows** using as **little energy** as possible.

- Circular – decoupling economic growth from resource use



from: [Decoupling Natural Resource Use and Environmental Impacts from Economic Growth](#)
2011 UNEP International Resource Panel Report

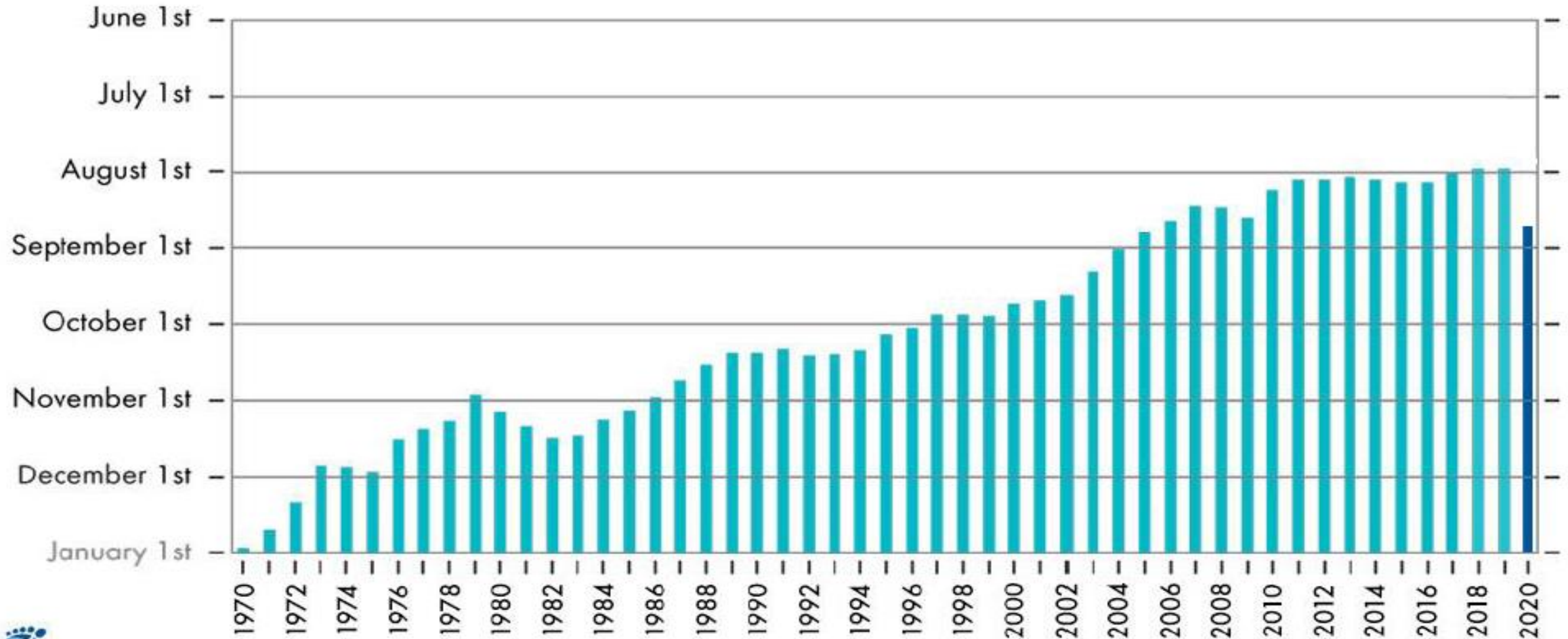


1 Earth

Earth Overshoot Day 1970 - 2020



1.6 Earths



Source: Global Footprint Network National Footprint and Biocapacity Accounts 2019

- Circularity in construction

Reduce

Minimum use of raw materials

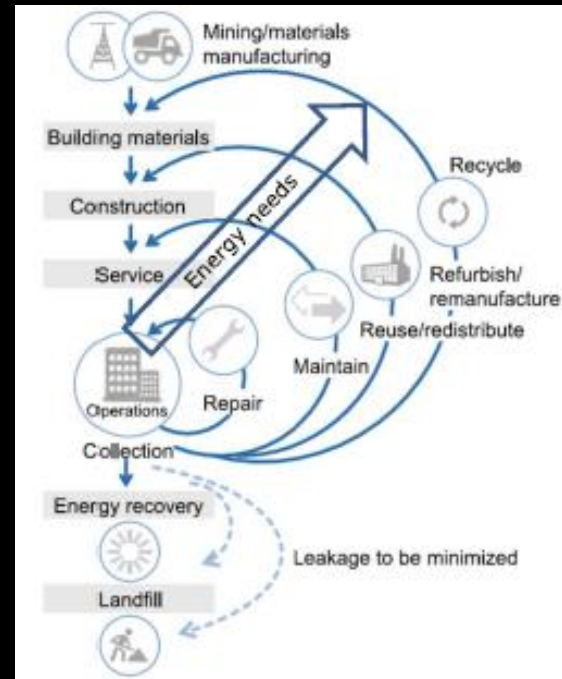
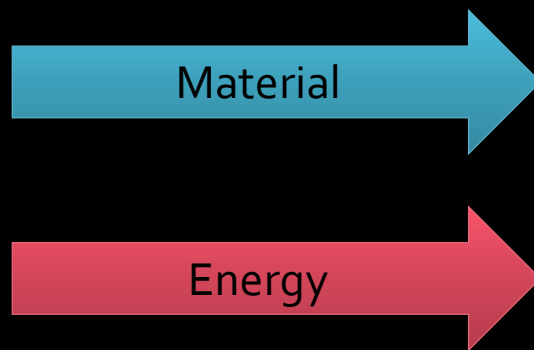
Reuse

Maximum (re)use of products and components

Recycle

High quality reuse of raw materials

MINIMISE INPUT



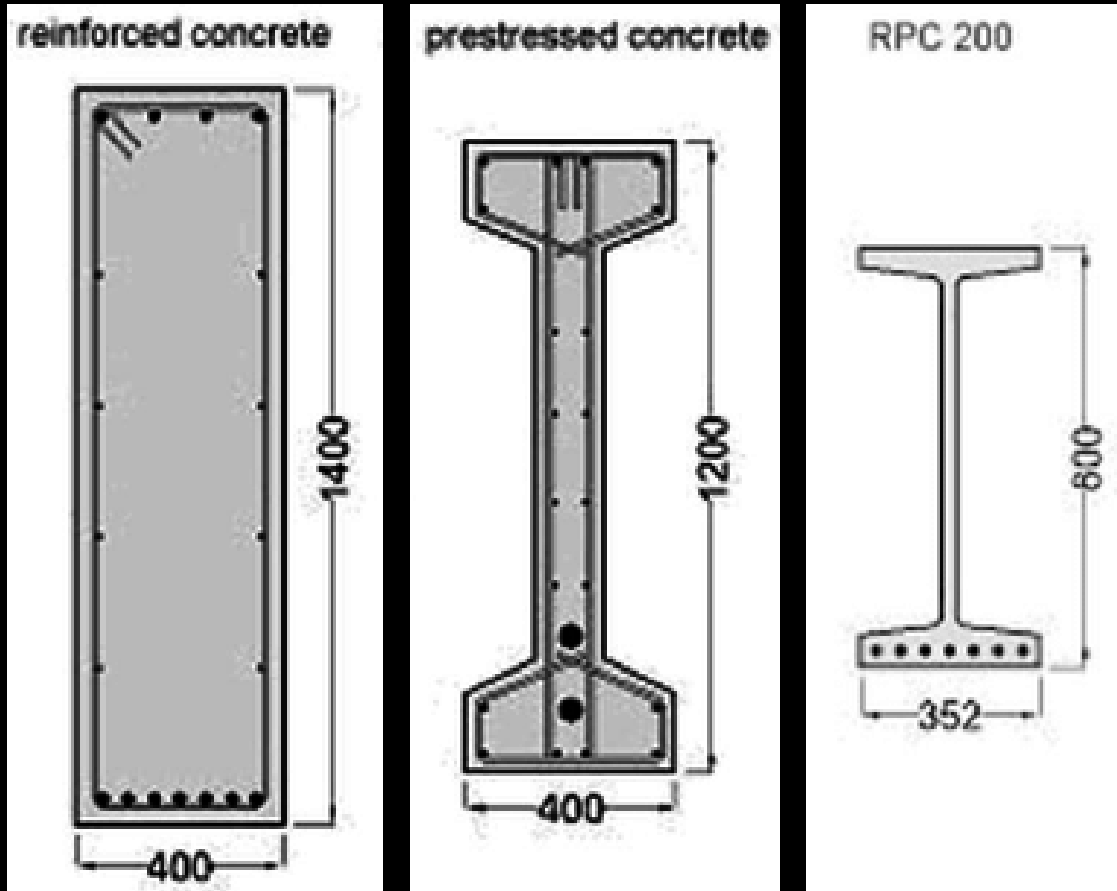
MINIMISE OUTPUT



- Circularity in construction - PRECAST

Reduce

PRECAST

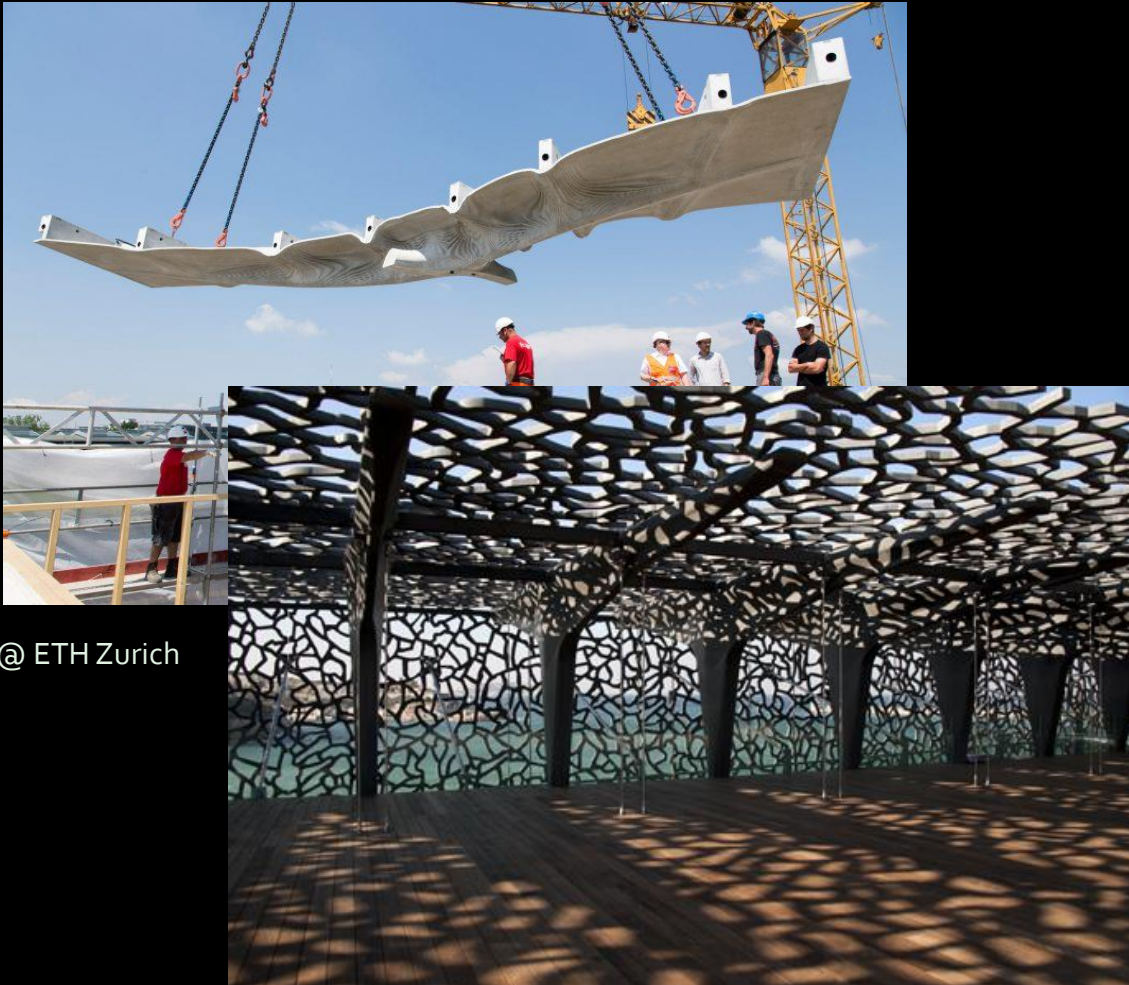


- Advantages of manufacturing in a factory (including quality control)
- Design optimisation (e.g. prestressing)
- Material optimisation (UHPC)

- Circularity in construction - PRECAST

Reduce

LEAN DESIGN



@ ETH Zurich

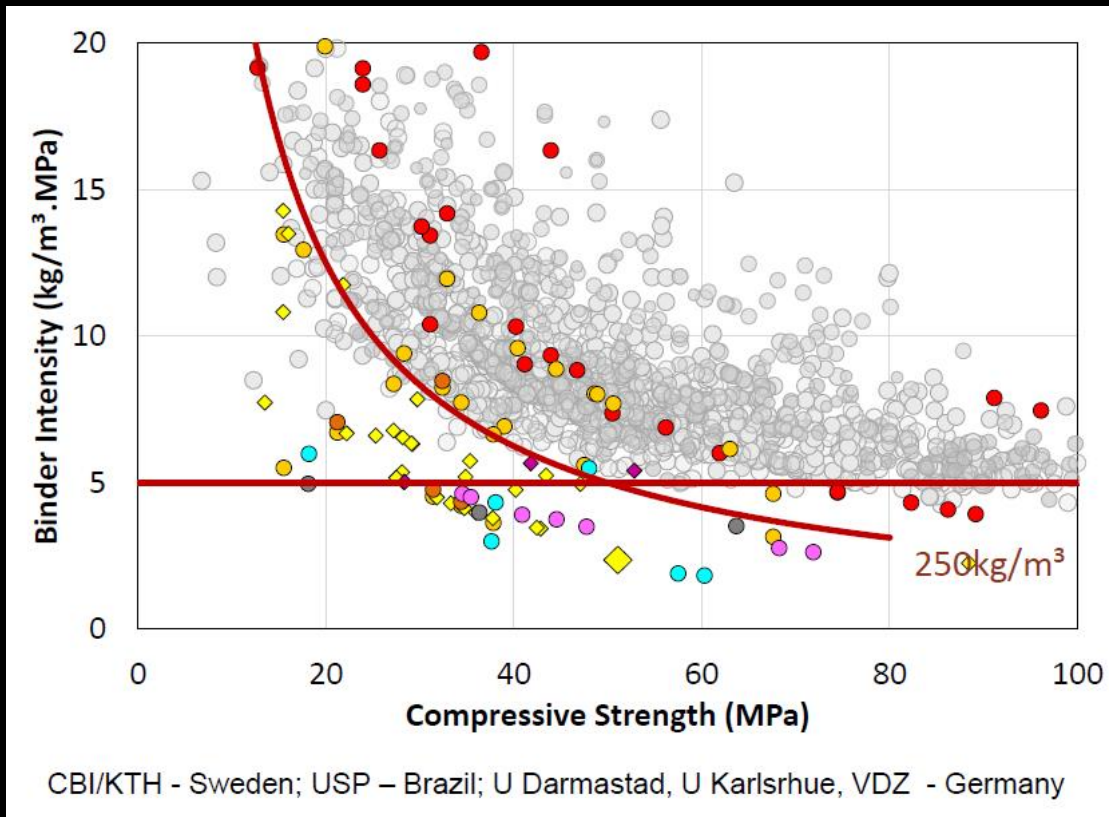
@ Mucem, Marseille

- Efficient use of concrete – use concrete only where needed
- Reduced waste at manufacturing and construction site

- Circularity in construction - PRECAST

Reduce

EMISSION CUT

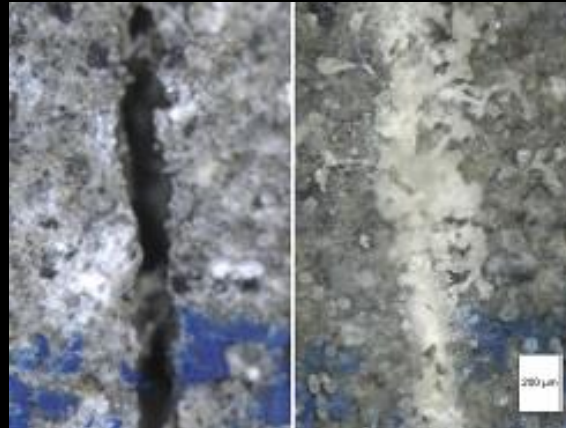


- Reduced binder intensity
 $\frac{\text{kg}}{\text{m}^3 \text{ MPa}}$
with increased concrete strength

- Circularity in construction - PRECAST

Reuse

DURABILITY



@ U Gent



@ Aggregate Industry

- Keep materials in the loop as long as possible
 - Long service life
 - Limited need for repairing (self-healing concrete)
 - Easy maintenance

- Circularity in construction - PRECAST

Reuse

STRUCTURE



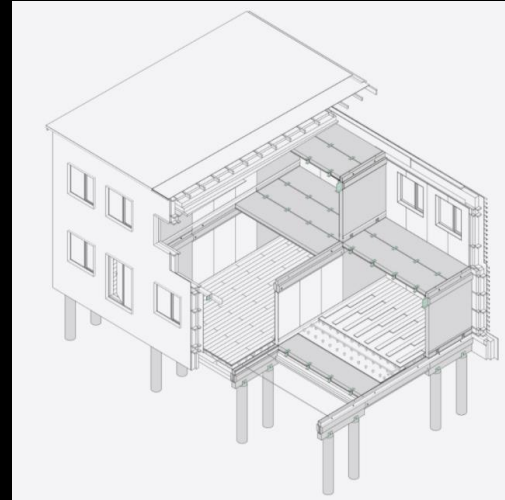
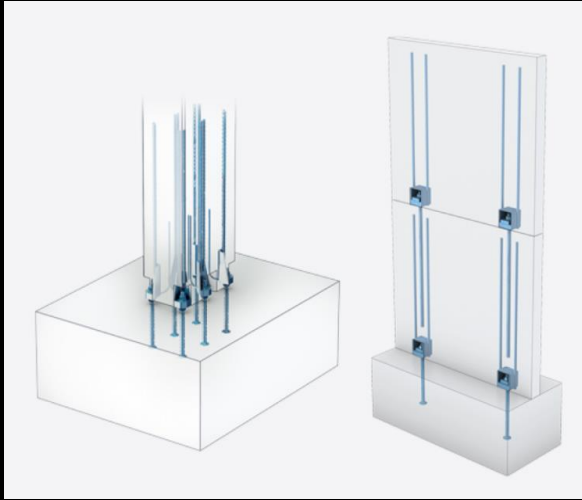
@ Make Architects

- Concrete structures can be given a second life
- Long service life and large spans can adapt to changing societal needs

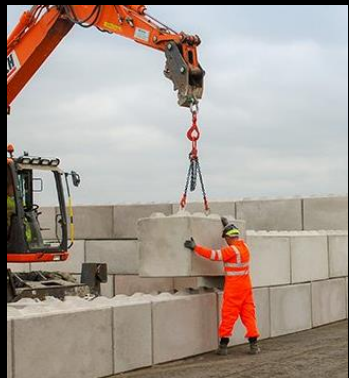
- Circularity in construction - PRECAST

Reuse

PRODUCTS



@ Peikko



@ J-J Hooks

- Precast concrete structures can be designed for disassembly
- Concrete elements can be reused for the same or different purposes

- Circularity in construction - PRECAST

Re-cycle

CONCRETE



@ Tradecowal

- Concrete is an inert material that can be 100% recycled
- Concrete demolition waste need to be treated to be successfully used as secondary raw material

- **Circularity in construction - PRECAST**

Re-cycle

Geotechnical applications



@ Gyanofcivilengineering



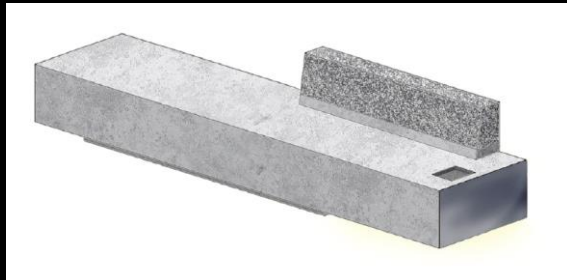
- **Avoids the need for quarrying**
- **Un-reacted cement increases stability**
- **Less treatment needed**

Using recycled aggregates for geotechnical applications is not downcycling!

- **Circularity in construction - PRECAST**

Re-cycle

Concrete



@ SeRaMCo



@VEEP

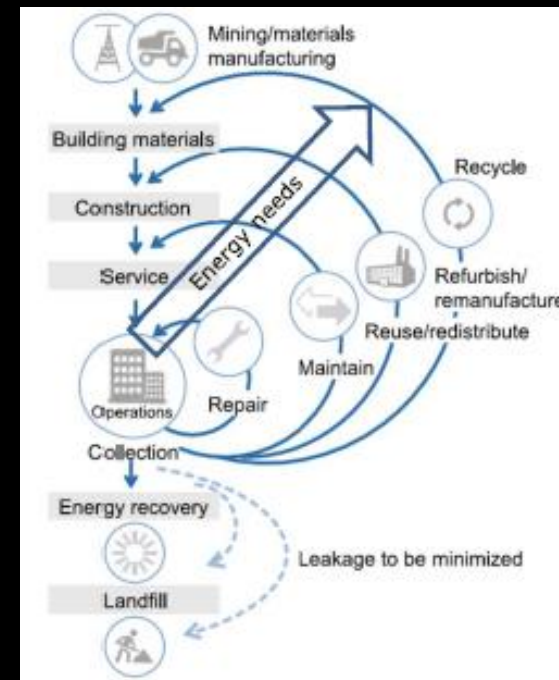
- **Concrete with recycled aggregates is possible**
- **Normal or specific applications**
- **Answer to societal needs**

- Conclusion - today

PRECAST provides
solutions
to the challenges of
construction 2050

- ◇ Low-carbon
- ◇ Sustainable
- ◇ Circular

CIRCULAR CONSTRUCTION



◇ Reduce

◇ Reuse

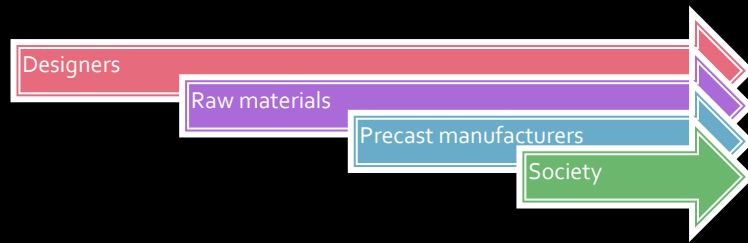
◇ Recycle

@ Ellen McArthur Foundation

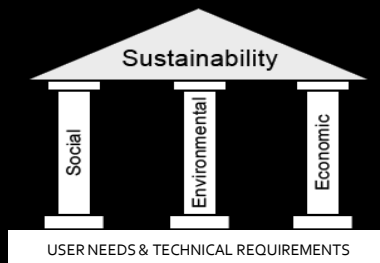
- Conclusion - future

Providing that the precast industry

1. Engages in a transition towards low-carbon together with stakeholders



2. Keeps on manufacturing with sustainability in mind



3. Fully embraces circular economy principles

- ◇ Innovation
 - ◇ Reduce resource use
 - ◇ Increase service life
 - ◇ Design for disassembly
 - ◇ Recycle
- ◇ Business model development
- ◇ Supporting policy framework



Thank you for attention

Secondary Raw Materials for Concrete precast products



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Please visit us
www.nweurope.eu/seramco

<https://twitter.com/seramconwe>

<https://www.linkedin.com/company/seramco>

