Future perspectives for precast – BIBM vision

BIBM Decarbonisation Pledge

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Go to ZERO
Why this document?

• To **contribute** to **mitigate** climate change

• To **foster** stakeholder collaboration

• Precast concrete industry's **leadership**

• To **shape policy**

• To **inspire others** to act
CORE
1. Decarbonise the full structure during the entire life cycle
2. Embed circular economy principles
3. Involve the full value chain

ACCESSORY
- The role of carbonation
- Enabling policy framework
- Roadmaps
- Standardisation

Cooperation is key!
1. Decarbonise Precast Concrete Works

- Low-carbon cement
- Low-carbon concrete
- Low-carbon (precast) concrete work

A net balance of zero CO$_2$eq emissions
- For the whole structure
- Throughout the whole life cycle
2. Using circularity to reduce the whole-life carbon

**REPAIR** - durability and the extension of product lifespans

**REUSE** - from a construction work that has reached the end of its service life into a new one

**REMANUFACTURE** – already used components are cleaned, repaired and combined to form new ones

**RECYCLE** – concrete to become secondary aggregates for new applications
Decarbonising precast concrete works is possible by optimising the design, mix and transportation across the supply chain.
Design of precast concrete works

- Optimize concrete use
- Utilize lightweight concrete for efficiency
- Leverage digital tools for a smaller carbon footprint
- Design precast structures for easy reuse
Raw Material Manufacturing and Supply

- Promote low-carbon cement
  - Reduce clinker/cement ratio with alternative binders
  - Develop new binders
  - Invest in CCUS technologies

- Use cement-reducing admixtures
- Use admixtures that allows for using low-carbon cements

- Opt for low-CO2 reinforcement

- Employ CO2-encapsulating aggregates

- Use cement-reducing admixtures
  - Allows for using low-carbon cements

- Opt for low-CO2 reinforcement
Value Chain: Precasters

Manufacturing

Design
- BIM/Digital fabrication – optimisation

Preparation
- Prestressing (thinner sections, longer spans)

Casting
- Concrete optimisation;
- Using higher strength concrete;
- Granulometry

Curing
- CO2 injection at curing

- Increase energy efficiency in manufacturing operations
- Electrification of precast plants
Further Reduction in the Emissions

- Thermal mass
- Low maintenance
- Long service life
- Energy grids integration
Further Reduction in the Emissions

- Disassemble and reuse
- Recycling into secondary aggregates for concrete
- Enhanced carbonation
• Natural Carbonation
• Enhanced Carbonation
• Horizontal standards

• Concrete-specific standards
  • Available
  • Under development
• All construction materials to play a role (material-neutral policies)

• **Permanent carbon storage** (vs. temporary)

• Science-based policies - focus on Life Cycle Assessment

• Provide a stable framework with clear rules for industry to develop and invest

• Create a holistic framework that takes into account whole life cycle, entire construction work and GWP as one of the sustainability indicators
Concrete is the second most used material in the world (after water)

3 pillars of the Pledge

Science-based policies (applying life-cycle assessment methods)

Small improvements in concrete sector in terms of carbon emissions will have a huge impact

1. Decarbonisation at the level of the construction work (during the whole life cycle)
2. The application of circular economy principles
3. The involvement of the full value chain

Precast industry is committed to achieve a sustainable and low-carbon society through our solutions, based on minimizing all environmental impact.
THANK YOU!