

The Concrete Initiative welcomes the New Circular Economy Action Plan and the ambitious vision of the European Green Deal. We are pleased to see that the Action Plan contains coherent, long-term measures to enhance the life span of construction works (through durability, maintenance, repair and reuse) and to increase the recycling and reuse of construction waste. The whole concrete value chain is fully committed to achieving a circular economy in construction!

Concrete – the solution for a circular economy in construction

The concrete sector has adopted life-cycle thinking and implemented ambitious goals to improve the sustainability, safety and health aspects of concrete construction. It also uses raw materials efficiently, preserves energy in buildings and processes, promotes recycling and ensures the occupational safety of its workers.

The concrete sector applies waste hierarchy principles throughout its value chain:

- **DURABLE** - Concrete structures can easily last more than 100 years, are easy to maintain and repair, are inherently resilient and capable to withstand natural disasters (typhoons, hurricanes, floods), and can be adapted to the eventual changing needs of the user;
- **RECYCLABLE** - Concrete is an inert material very easy to handle at its end-of-life. When a concrete structure is dismantled, concrete elements can be re-used, or demolished and crushed and be 100% recycled as aggregates;

Concrete is a designed mixture of aggregates (up to 80% in volume), cement as binder, water, chemical admixtures, additions (fly ash, silica fume, ground granulated furnace slags and others), and entrapped and entrained air

- **LOCAL** - Concrete is mainly manufactured close to the final user. This reduces the adverse impacts of transportation. Concrete uses either natural, locally available materials, or quality recycled materials;
- **WATER-EFFICIENT** - Concrete properties are a function of the water/binder ratio. The water content can be reduced by using a more performing cement and proper admixtures. For instance, the addition of 1% of water-reducing admixtures corresponds (with equal workability) to a water reduction of about 20%;
- **ENERGY-EFFICIENT** - Concrete is one of the most sustainable construction materials when both the energy consumed during its manufacture and placing and its in-use inherent properties are taken into account. Thanks to its thermal mass, concrete lowers the need for heating & cooling of buildings – reducing both energy needs and peak power demand – compared to lightweight building solutions;
- **STRONG** - Steel-reinforced concrete is used for all types of structures (bridges, highways, runways, roads, dams, tunnels, buildings) and it is the only solution for applications carrying heavy loads such as footings, foundations, retaining walls. The concrete “skeleton” and the steel “musculature” work together to create one of the most durable and economical composite materials;

- **INNOVATIVE** - Cement (one of the main constituents of concrete) manufacturers substitute an average 46% of their fossil fuel needs with alternative sources (e.g. non-recyclable waste or biomass) and 5% of raw material needs;
- **CARBON-SINK** - CO₂ from the atmosphere is absorbed by concrete during its whole life through a natural process called "carbonation", resulting in CO₂ being permanently bound. Crushing concrete at the end of life contributes to this phenomenon thanks to the increased surface of the crushed material exposed to CO₂ in the air.

Industry commitments

The concrete sector is engaged with stakeholders throughout the whole construction value chain in order to develop long-term business models for the implementation of a circular economy.

The sector promotes the design of concrete structures built with as little material as necessary, adaptable to the changing needs of their users and easy to be dismantled and treated at their end-of-life. Research projects are being carried out at national and European Union level to increase circular economy in the concrete sector through:

- **RECYCLING**: Using in new concrete of up to 100% recycled aggregates wherever these are largely available, and the concrete life-cycle analysis (LCA) results are improved over the whole life cycle with respect to use of natural raw materials;
- **DESIGN**: Promoting the "design for disassembly", which allows both reusing of elements and better sorting at demolition stage;
- **RESOURCES SUBSTITUTION**: Increasing the substitution of both fuels and raw materials at cement manufacturing, the latter of which will include the increased use of recycled concrete fines and other construction waste materials such as waste bricks.

Policy needs

The Action Plan should boost circularity of construction materials towards a carbon-neutral built environment by ensuring appropriate use of resources to fulfil society's needs in the most efficient manner with the least environmental impact.

The features of concrete described above can only be taken up entirely at the level of the construction work and over its whole life-cycle, as opposed to product level. The Concrete Initiative takes the view that in order to determine the full environmental impacts and benefits of construction products, these must be considered as part of a whole system, i.e. the building itself.

The Concrete Initiative advocates the use of CEN/TC350 standards which provide appropriate rules for an LCA of buildings and infrastructures based on Environmental Product Declarations. Any EU new initiative on construction should be based on an LCA, as is the case of the European Commission Level(s) building assessment framework.

The Concrete Initiative supports the review of EU waste policy to ensure greater circularity throughout the EU economy:

- Landfilling of recyclable construction and demolition waste (C&DW) should be minimized across the EU;
- Focus should be on maintenance, repair and reuse of structures. The action should include a policy goal of 'design for adaptability and disassembly' to maximise reusability of structures and, when possible, concrete elements in new projects;

- The Concrete Initiative recommends a performance-based policy for the use of recycled material from CDW. A mandatory recycled content would not work for concrete as the supply today does not match the demand. Even if all concrete C&DW in Europe were recycled, this could supply approximately only 10% of total demand for aggregates for all applications. It would also be neither technically nor environmentally effective;
- In production, the cement and concrete sectors not only use natural raw materials but also by-products from other industries, thus reducing the use of virgin materials and allowing recyclability of by-products. The European Commission should promote the uses of such by-products at EU level.

A circular economy can be achieved only if all actors in the value chain are involved in the digitalisation of the construction sector. That is why The Concrete Initiative supports the [DigiPLACE project](#). The Concrete Initiative welcomes an open (digital) platform bringing together the building & construction sector, architects and engineers, local authorities and end-users. Indeed, The Concrete Initiative has already joined different sectors in the concrete value chain, from suppliers of raw materials to product manufacturers, and wishes to jointly take on these issues.

We are eager to get involved in the future work and provide the concrete experience in the field for the full implementation of the new Circular Economy Action Plan.
