

Department of Enterprise, Trade and
Employment, and
Department of Environment, Climate and
Communications

Public consultation on ecodesign for sustainable products

A SUBMISSION BY
CEMENT MANUFACTURERS IRELAND



12th September 2022

Cement Manufacturers Ireland

Cement Manufacturers Ireland (CMI) was established in Ibec in 2003 as the representative body for the indigenous cement manufacturing industry. CMI has three members in the Republic of Ireland; Breedon Cement, Irish Cement, and Mannok Cement and an associate member in Northern Ireland - Cookstown Cement.

Located in predominantly rural locations the cement industry has a long industrial heritage using abundant local resources to manufacture high quality cement. Our members operate modern cement factories to the highest European standards and support over 2,000 jobs.

The members compete on the island of Ireland to supply cement products to both domestic and export markets. Accessing export markets has broadened our customer base and been a vital source of revenue during periods of reduced demand from the domestic construction sector, allowing us to continue operations and investment in our workforce and factories.

CMI is a member of Cembureau, the European Cement Association and our members are aligned with their roadmap '*Cementing the Green Deal*' to achieve carbon neutrality by 2050. The roadmap details the wide range of initiatives, investments and innovations that will deliver this ambitious target for our sector.

We welcome the opportunity to outline the important role cement and concrete play, both now and into the future in supporting ecodesign decisions in the construction of a modern energy efficient built environment.

Cement – an essential ingredient

Our members' high-quality cement is the essential ingredient in concrete. Concrete, is the most common construction material because it provides unrivalled versatility, resilience, safety, and durability. Properly designed and constructed concrete structures can last 100 years or more, making it resource efficient and over this extended lifespan concrete buildings have low embodied carbon.

Cement manufacturing is a large-scale, energy intensive activity that transforms natural raw materials into cement powder which is essential for virtually every construction project. Our members are continuously investing in upgrades and improvements and today Ireland has modern energy efficient cement factories operating to European Best Available Technology (BAT) standards producing more sustainable local cement products for Ireland's construction sector.

In line with the Climate Action Plan all four cement factories have ambitious programmes to achieve 80% fossil fuel replacement by 2030. The use of alternative fuels directly reduces the carbon emission from the factories and significantly boosts Ireland's self-sufficiency by making the thermal capacity of the cement kilns available for the recovery of a range of discarded resources.

In addition, to fossil fuel replacement our industry is becoming more circular, improving resource efficiency, reducing virgin raw material consumption and accessing decarbonated raw materials. There is a significant opportunity for our members to work with Regulators and the wider construction and waste sectors to select and process suitable fractions from construction and demolition (C&D) activities. Our members are researching a number of promising fractions of end-of-life concrete and C&D wastes that can be taken back into our cement manufacturing process as raw materials. Because of the scale of our members operations there is significant capacity to help construction become more circular by taking in these discarded resources. Every tonne of material we can take back avoids the need to landfill or export that material and in addition helps to avoid extraction of additional resources. At the extreme temperatures inside our cement kilns the resource value of these materials can be unlocked, helping us to reduce our use of virgin raw materials, access already decarbonated raw materials and make our industry more circular.

At a product level our members transformed their manufacturing processes to introduce a new lower carbon CEM II cement to customers in 2004. The introduction of this cement type in addition to progressive Irish cement and concrete standards and other innovations in the market has achieved lower carbon concrete for Ireland's construction sector, making it more sustainable and reducing environmental impacts.

Along with all other sectors the construction sector is working towards a vision of a zero-carbon future. Concrete is crucial for the construction of that zero-carbon future; be it the foundations and towers of wind turbines, on land or at sea, energy efficient buildings, new transport infrastructure, flood protection or other projects aimed at adapting to climate change. Concrete delivers real-world lifestyle, shelter and environmental benefits to current and future generations.

Concrete – a circular material

Concrete is a fundamentally circular material meeting many of the attributes of circularity and ecodesign; it is manufactured using local resources, supporting local jobs, with short

and resilient supply chains. Concrete structures can be re-used, repaired and refurbished ensuring the resources have a long and productive life in our buildings and infrastructure and at the end-of-life concrete is 100% recyclable.

All of this should be seen in the context that concrete provides significant societal benefits to our daily lives; from our homes, schools, places of work, healthcare, transport and energy infrastructure, concrete is the essential enabler of the built environment all around us. At a material level concrete is an extremely resource efficient, low carbon material. The primary challenge for our sector is to further reduce our impacts while meeting societies huge demand for concrete to deliver the standard of living expected in the modern world.

Concrete and ecodesign

According to the European Environment Agency eco-design is;

The integration of environmental aspects into the product development process, by balancing ecological and economic requirements. Eco-design considers environmental aspects at all stages of the product development process, striving for products which make the lowest possible environmental impact throughout the product life cycle.

The use of concrete in modern energy efficient homes fulfils economic, functional and design requirements. When one considers that ecodesign objectives in the built environment, are *striving for products which make the lowest possible environmental impact throughout the product life cycle*, the 'product' in this case is the building or structure, a home or a school or a bridge. And the product life cycle is the full lifespan of the building.

Cement and concrete already deliver reduced environmental impacts in our homes, both inside and out, by reducing the carbon footprint, lowering the energy needs and improving indoor air quality.

Because concrete is a durable and robust construction material it gives an extended lifespan to the building making it a low carbon, resource efficient and economic choice. In addition, because of its resilience the need to repair or rebuild a concrete home, even after extreme weather events is also minimal.

Concrete's natural ability to retain heat and release it gradually into the indoor spaces improves the comfort for occupants and helps reduce energy requirements and the heating and cooling costs.

The use of internal architectural concrete finishes, like polished concrete floors reduces occupants' exposure to volatile organic compounds (VOCs) often found in adhesives, paints, fabrics and carpets. Concrete is naturally fire-resistant, so it also eliminates the requirement for potentially harmful flame retardants in carpets and other manufactured floor products.

Concrete – a valuable resource

The function of construction is the delivery of essential services for society and to enable economic growth; the radical transformation required to achieve a more circular and ecologically considered construction sector must continue to fulfil these functions while reducing environmental impacts.

The transformation of Ireland's built environment must address two parallel challenges, how to recognise the resource value in our existing buildings and infrastructure, and how to ensure we make all the right choices so that all new construction is as sustainable as possible.

Delivering effective renovation projects can extend the lifespan of many existing buildings, making them more comfortable and energy efficient. However, as older building stock comes to the end-of-life informed life cycle assessments must be undertaken before demolishing the building. If it is a concrete building, the structural concrete frame will last far longer than the other construction materials and elements. Could that structure be repurposed to achieve a new life as a much lower impact building?

If the correct decision is to demolish the building then a 'pre-demolition audit' will identify all the materials and building elements that can be recovered and re-used on site or elsewhere. The benefit from maximising the value of these resources is that Ireland will become more circular with reduced waste disposal and reduced climate impacts. Our members recognise the opportunity our high temperature circular manufacturing process can play in building a more circular Ireland by recovering higher quantities of discarded resources including C&D materials. A future with less waste, more recycling and where resources are maintained or kept circulating is only possible when all sectors and actors in the economy recognise the real value of resources and the consequences of short-term decisions.

When a new building is being designed, the location, the materials, the construction method, energy efficiency, transport connectivity, accessibility, impact on the landscape as well as the contribution or function all need to be factored into the decisions. These design decisions should be material neutral and recognise the contribution of each and every

material and its appropriate use. Design decisions must look beyond what the building is made of and instead critically examine the performance and function. Can the building be multi-use to maximise occupancy opportunities? How flexible is the design to allow the build to adapt to changing work practices or future societal requirements? Taking a considered approach to the construction process can over the full life cycle of the building lead to significantly reduced environmental impacts and fulfil the objectives of 'ecodesign'.

Building with concrete fulfils many of these objectives. Concrete is made with local materials, it is robust, it can be refurbished, repaired and re-used and at the end-of-life concrete is 100% recyclable. Properly designed the new buildings we are constructing today can last for many generations and then could be remodelled or disassembled to ensure that the resource value in the concrete is maintained. Concrete buildings can last over 100 years, if every other product in daily use had a similar extended life providing the intended service we could be happy that we had made considerable progress.

Conclusion

The built environment of tomorrow will have sustainability and ecodesign at its core. Maximising the contribution of all construction materials to deliver a sustainable built environment in Ireland will be essential. Using local resources will help reduce environmental impacts while supporting sustainable economic activity. Concrete ticks all these boxes and is central to meeting the needs of society.

Building regulations, product standards and product certification must be rigorous and robust and pushing them to address sustainability and ecodesign will take time. Using life cycle assessments of the whole building, the 'product' in the ecodesign process, will allow industry professionals using this objective data to make better informed decisions.

The construction sector will need to be encouraged to transition from a 'demolish and build' model to recognize greater value in a 'preserve and renovate' approach to development. Finding ways to embed 'eco' principles in design and investment decisions will drive this transition. A new way of valuing resources is required, to reward a longer-term vision over the current focus on short-term returns.