Sustainability Series launch: Accelerating decarbonisation of cement and concrete
Summary of event held on 22 September 2025

Running since 2022, The Concrete Centre's Sustainability Series is an annual four-week programme of online events and resources offering the latest guidance, progress updates and expert discussions on the design, specification and use of sustainable concrete.

The 2025 series explored key themes including decarbonisation, circular economy, climate resilience and concrete's role in supporting biodiversity and nature-based solutions. It also included a focus on practical strategies to reduce carbon through design and specification interventions.

To launch the 2025 series a hybrid event was held on 22 September, at which the *UK Concrete and Cement Industry Roadmap to Beyond Net Zero progress report* was also launched. This paper provides a short summary of the launch event, with links to recordings**.**

The 2025 roadmap – a snapshot

- The UK concrete and cement industry is making significant progress to decarbonise its manufacturing. Early action has seen CO_2 emissions generated by the UK sector now 63 per cent lower than 1990 levels and the industry is decarbonising much faster than the UK economy as a whole (54 per cent over the same period).
- UK concrete and cement currently account for around 1.5 per cent of UK CO2 emissions, five times lower than the global average where cement accounts for around 7 per cent of emissions.
- The UK industry has a clear roadmap to net zero. This will be delivered through decarbonised electricity and transport networks, fuel switching, greater use of low-carbon cements and concretes as well as Carbon Capture, Use or Storage (CCUS) technology for cement manufacture.

A copy of the MPA's UK Concrete and Cement Industry Roadmap to Beyond Net Zero: Progress report 2025 is available to download here.

Accelerating decarbonisation of cement and concrete

The concrete industry is collaborating to decarbonise and is making good progress on its roadmap to achieve beyond net zero by 2050. The 2025 Sustainability Series launched with the latest progress report from the MPA's UK Concrete and Cement Industry Roadmap to Beyond Net Zero. The event highlighted key initiatives driving decarbonisation across the sector.

During the event we were delighted to welcome an expert panel to discuss the opportunities and challenges to decarbonisation of the cement and concrete sector. Each provided a short presentation as below. The subsequent Q&A and panel debate was then chaired by Elaine Toogood, Senior Director, MPA Concrete

- **UK Concrete and Cement Industry Roadmap to Beyond Net Zero: an update on progress -*Diana Casey, Executive Director, Energy and Climate Change, Mineral Products Association* - Dr Diana Casey:** Executive Director, Energy and Climate Change, Cement and Lime, Mineral Products Association
- **Carbon capture – an emerging reality in the UK: update on the development of Peak Cluster - John Egan:** CEO, Peak Cluster Limited

- **Implementing lower carbon concrete: a client's perspective- Jonathan Ly:** Director of Structures, Canary Wharf Group

- **A new facility for testing the performance of low carbon cement and concrete -Sam Bell:** Group Leader, Sustainable Cement and Concrete, Materials Processing Institute

A recording of each session is available here: and a summary of the Q& A session is below:

Regarding the MPA *Roadmap to Beyond Net Zero progress report:*

- ***The progress shown in the Roadmap to Beyond Net Zero is based on absolute emissions, what has the sector achieved in terms of reduction in CO_2 per tonne of cement?***

  Dr Diana Casey commented that while the 2025 progress report highlights a 21% reduction in CO_2 emissions between the 2018 baseline and 2023, it can't be ignored that a proportion of this is due to a 18% reduction in domestic cement production over the same period. However, the sector has still achieved considerable decarbonisation, with relative emissions (emissions per tonne cement) in 2023 over 30% lower than in 1990.

- ***How much have rising cement imports impacted the CO_2 reduction progress shown in the report?***

  Dr Diana Casey explained that domestic cement production has decreased but demand is more stable, with only a slight reduction since 2018. This means that while domestic production has fallen, the proportion of the market made up by imports has increased. This is a consequence of the competitiveness challenges faced by domestic cement production, including high electricity costs. One of the results is that the overall emissions associated with the consumption of cement may not be decreasing because we are offshoring production overseas.

- ***Is any consideration being given to slab design and more material efficient solutions using concrete?***

  Elaine Toogood explained this was something the concrete industry has been actively providing guidance on and is due to feature prominently in week 2 of the 2025 Sustainability Series. The Concrete Centre's Concept tool, for example, provides comparisons of concrete structural frames to help early design decisions and provide a better understanding material efficiency as well as carbon options for different framing solutions.

Regarding the work of the Materials Processing Institute to accelerate the decarbonisation of cement and concrete:

- ***How many formulations or mixes could you produce over the course of a month?***

  Sam Bell commented that this generally depends on the type of testing that is required. For a full suite of tests, approximately three are achievable per day. However, for a more basic set of tests that might include strength-testing only, six or seven can be completed per day.

- ***Apart from refractory ceramic fibres (RCF), what other types of material could be used as a substitute for ground granulated blast-furnace slag (GGBS) or fly ash?***

  Sam Bell noted that there are a number of substitutes available, citing calcined clays and Alkali-Activated Cementitious Materials (AACM) as two examples of the alternative materials that have the potential to be used.

- ***Where is the RCF coming from?***

  Sam Bell explained that crushed concrete demolition waste is a good source of RCF. Concrete that can be recycled as aggregates is removed and the remaining waste is then ground to produce RCF.

Peak Cluster and Carbon Capture Usage and Storage:

- ***Why is it so urgent to progress with Peak Cluster?***

  John Egan commented that cement and lime production in the UK is threatened by low cost, high-carbon imports. Cement imports have trebled in the last 20 years and now account for a third of demand.

  With the carbon costs associated with both the production and import of cement, we need to implement Carbon Capture Usage and Storage (CCUS) as a matter of urgency to address these economic and environmental threats.

  By doing so, we can help to secure a long-term, sustainable and world-leading position for the 40% of the UK's cement and lime production that is in Peak Custer, situated in Derbyshire and Staffordshire. Failing to rapidly address the carbon costs of manufacturing will risk continued deindustrialisation, loss of skilled jobs and an ever-increasing reliance on imports.

- ***What does Peak Cluster need to enable it to be delivered?***

  John Egan explained that policy support is the first key step to ensuring that the Peak Cluster can be delivered effectively. He added that the team were delighted with the Chancellor's announcement on 7th July that the National Wealth Fund has made an equity investment into Peak Cluster Ltd, which is developing the shared pipeline infrastructure component of the project. However, he added that to enable the project to reach the target of a final investment decision in Peak Cluster and its storage partner Morecambe Net Zero (MNZ), before the end of this parliament, there is a need to see urgent progress on a route to market. There is currently no route for projects which are not in Track 1 of the Government's CCUS programme.

- ***How does Peak Cluster compare in size and CCUS impact to the HyNet project in the North West of England?***

  John Egan explained that Peak Cluster will initially prevent emissions of around 3 million tonnes per year of CO^2, from 40% of the UK's cement and lime production. He highlighted that this is about a quarter of all emissions from Derbyshire and Staffordshire but that the CO^2 transport and storage infrastructure will be able to prevent even more emissions than this.

  MNZ will have capacity to store up to 1 billion tonnes of CO^2, at an eventual rate of 25 million tonnes per year. Some of this will come via additional manufacturing and energy facilities connecting into the Peak Cluster pipeline, and some will come to MNZ via non-pipeline transport routes from elsewhere in the UK and Europe, by rail and ship.

  By comparison the HyNet project will ultimately be able to store about 10 million tonnes per year, although this is initially limited to 4.5 million tonnes per year, and the store in Liverpool Bay has a total storage capacity roughly 20% that of MNZ. HyNet is much further advanced, with the CO^2 transport and storage system already reaching financial close. Both projects are essential and complementary rather than in competition.

- ***How does the carbon footprint of building and operating the project compare with the emissions benefit?***

John Egan noted that the 'carbon payback' using a lifecycle analysis on the embodied carbon in the equipment and infrastructure to be built, and the energy used for operation, is roughly 5 months.

- ***CCUS is only a short term solution, are we not better off spending all that money on a technology that will be suitable and effective for years to come?***

  Dr Diana Casey reiterated the need to act urgently to keep global temperatures below 1.5ºC, but also that there is no convincing alternative cement available with the scalability and versatility of Portland cement. She stated that we should absolutely be continuing to invest in research and development of alternatives, but that in the meantime we need to reduce emissions now and that requires carbon capture. This is therefore not an 'either or' question, and both are definitely required.

  John Egan added that the UK is blessed with the rich geology required to carry out CCUS effectively, just as in the same way it has the rich, natural resources to produce cement. There is a real opportunity here and now for CCUS that we must take advantage of.

  Development of new construction materials takes a very long time (decades) to demonstrate and commercialise. He explained that, if we don't implement CCUS now we will continue to emit carbon associated with producing cement and lime, so there is a critical need to move now, whilst developing new alternative materials and processes in parallel.

- ***Isn't carbon utilisation better than storage?***

  All members of the panel discussed the question and broadly agreed that eventually carbon utilisation will be the solution but that the technology it is not currently available at the scale required. There are however some interesting projects in progress. Part of the MPA's project on recycled concrete fines (RCF) has included a consideration of the carbonation of RCF, while Canary Wharf Group has trialled technology using accelerated carbonation of recycled aggregate.

  John Egan also observed that the CO_2 from CCS will continue to be accessible after it has been stored in the ground, so that if and when technology advances there will still be a potential to make better use of the CO_2 as a future resource.

Materials circularity at Canary Wharf

- ***Given Canary Wharf Group's experience and successes, what guidance would you give another developer wanting to reduce the embodied carbon of the concrete in their project ?***

  Jonathan Ly responded advising that it's important to engage with your supply chain early. Through early engagement with its supply chain partner Holcim UK, Canary Wharf Group was able to identify an opportunity to embrace innovative circular thinking as part of its Wood Wharf project.

- ***Will the results of the testing being carried out by Canary Wharf Group be shared in future and, if so, how will you do this?***

  Jonathan Ly noted that Canary Wharf Group is intending to share results from testing in the future and would like to work with The Concrete Centre as part of this process.

New resources and recordings of webinars delivered across the 2025 Sustainability Series are now all freely available to download. Visit www.concretecentre.com/sustainabilityseries for more information.