

Response ID ANON-3FVQ-7NXX-N

Submitted to Towards a market for low emissions products: call for evidence
Submitted on 2022-02-28 18:18:48

Questions about you

What is your name?

Full name:
Florence Greatrix

What organisation do you represent? (if applicable)

Name of organisation:
The Interdisciplinary Circular Economy Centre for Mineral-based Construction Materials

Are you happy for your response to be published?

Yes, with reference to my organisation

What is your email address?

Email:
f.greatrix@ucl.ac.uk

Would you like to be contacted when the summary of responses to the call for evidence is published?

Yes

Questions about your organisation

1* What type of organisation do you represent?

Academic institution

2* Do you represent or hold expertise on a specific industrial sector? If yes, which sector?

Please provide details here:

Construction, cement manufacture and use.

The Interdisciplinary Circular Economy Centre for Mineral-based Construction Materials (ICEC-MCM) is pleased to contribute to this consultation. This response has been prepared by:

Prof John Provis, Professor of Cement Materials Science and Engineering, University of Sheffield;
Dr Feja Lesniewska, ICEC-MCM Post-Doctoral Researcher, UCL;
Prof Leon Black, Professor of Infrastructure Materials, University of Leeds;
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With support from Florence Greatrix, Policy Adviser, UCL

3* Do you / your organisation manufacture or purchase industrial products as defined on page 9 of the Call for Evidence document?

Neither buyer nor manufacturer

4 If you are a manufacturer of industrial products, do you predominantly sell your products to UK buyers or export to other countries?

Not Answered

5 If you are a buyer of industrial products, do you predominantly buy products from UK or international manufacturers?

Not Answered

Chapter 1 - Defining Low Emissions

6* Do you agree with the approach to the emissions scope set out in Chapter 1?

Yes

Please expand on your response here:

Scope 1, 2 and 3 refer to different systems boundaries for the life cycle of an industrial product. Life Cycle Assessment (LCA) is recommended to identify the hotspots in the life cycles of industrial products, to avoid "problem-shifting". For example, focussing on Scope 1 emissions for a concrete product could lead to reduced durability, which would then result in increased Scope 3 emissions when refurbishment or reconstruction becomes necessary. We suggest that emissions should be calculated on the full life cycle, incorporating Scope 1, 2 and 3.

6.1 Does your business have estimates (either at the business level or the product level) of the split of emissions falling into Scope 1, Scope 2 and Scope 3?

If so, please provide them here:

If you would like to upload a file containing your emissions estimates, please do so here:

No file uploaded

6.2 What do you see as the optimal scope of emissions to be included in the definition of low emissions products in order for labelling and standards policy to be both effective and workable? Could the exclusion of some Scope 3 emissions create any negative impacts?

Please provide your answer here:

6.3* Which, if any, Scope 3 emissions categories are essential for inclusion in the assessment for your sector/product(s)? Please specify why you think they should be included.

Please provide your answer here:

We need to be careful about including concrete carbonation as a benefit in any scope 3 emissions. Scope 3 emissions need to reflect practice and real life, rather than ideal scenarios. For example, current figures being put forward include concrete absorbing around 100kg CO₂ per tonne if ground finely and allowed to carbonate. This is not based on reality, where concrete fines are never left in air to carbonate naturally.

6.4 How should the emissions of 'value retained' products (see glossary) be evaluated to allow for comparison with new products?

Please provide your answer here:

We suggest the introduction of standards for reprocessing of waste and end-of-service construction minerals in our response to Question 14.7. A distinction should be made between down-cycling and closed-loop recovery at high value, at product end-of-service.

6.5* Are there any limitations of an emissions-only approach to assessing climate impact that may affect your sector/product(s)? Please specify any additional metrics that you think should be included.

Please provide your answer here:

7* How do you think the level of emissions at which the definition of low emissions products is set should change over time? Please consider questions 7.1 - 7.5.

7.1* Do you agree it should become more stringent over time?

Agree

Expand on your answer here if needed:

The level of emissions could be set using targets which might become more ambitious over time. This could link with the Environmental Permitting (England and Wales) regulations (2016) (EPR) and a potential revision of the Industrial Emissions Directive (IED).

We agree with the principles from the (draft) Low Carbon Concrete Roadmap from the Green Construction Board and the Institution of Civil Engineers.

7.2* Do you have any suggestions for how the level of emissions should be set?

Please provide your answer here:

This could be linked to the Best Available Techniques (BAT) and IED.

7.3* Do you have any suggestions for how a trajectory of increasing stringency should be shaped for your sector and how regularly any definition would need to be revisited?

Please provide your answer here:

A much greater climate impact mitigation will come from making the soonest-possible emissions cuts. It's preferable to act rapidly now rather than slowly, with rapid action later. Lower-hanging fruit should happen now as a matter of urgency. For example, broadening the scope of supplementary cementitious materials usage in British Standards for concrete (e.g., BS 8500), and reducing minimum cement content limits in BS 8500, to enable

innovation in the use of more sustainable concretes based on mix designs that are well known to be safe and durable through their use in other European nations.

7.4 How far in advance would you like government to give notice of this trajectory?

Please provide your answer here:

7.5 Do you have a suggestion of what an ambitious but achievable level of emissions would look like for your sector/product(s) through the 2020s? This can be expressed as a benchmark of embodied emissions or as conditions (for example, that the benchmark needs to be reasonable, given that deep decarbonisation technologies will not be readily available yet).

Please provide your answer here:

We agree with the suggestions laid out in the (draft) Low Carbon Concrete Roadmap from the Green Construction Board and the Institution of Civil Engineers.

8 Do you agree with the approach of setting more stringent emissions levels as the basis for voluntary standards, vs lower-stringency mandatory standards?

Not Answered

Expand on your answer here if needed:

8.1 What methodology could be used to determine the stringency of these more ambitious definitions?

Please provide your answer here:

8.2 How could a range of low emissions levels for voluntary standards be used most effectively to drive industrial decarbonisation?

Please provide your answer here:

9 Do you agree that sector-level definitions are likely to be the most appropriate level of granularity for demand-side policies?

Not Answered

Expand on your answer here if needed:

Sector level definitions from any trade organisation should be avoided, with wide stakeholder representation to avoid problem-shifting. We need to be considering decarbonisation at a systems level. For example, if we want to decarbonise infrastructure, then engineers will need to compare, for example, steel concrete and timber. This cannot be done if each trade body has pushed for separate set of benchmarks.

Any sector-level policies should not be material specific. For example, they could include infrastructure, housing and transport.

9.1 Is there a method of simplifying the emissions scope in order to set one definition that covers a broad range, or all, of the products within your sector? (Such as the Responsible Steel cradle-crude steel approach)

Please provide your answer here:

9.2 Do you have a view on using market-wide assessment methodologies to allow buyers to compare products across sectors?

Please provide your answer here:

10 What are your views of the existing efforts to define low emissions for industrial products, either in your sector/for the products you manufacture, or for wider industry? Please consider questions 10.1 - 10.3.

10.1 Provide details of the definition/scheme (e.g. sector/product(s) it applies to, emissions scope, benchmark) and, where possible, links to further information and/or contact details.

Please provide your answer here:

Low carbon measures need to incorporate suitable and consistent system boundaries and functional units and use consistent good quality data. So, emissions per tonne of material are meaningless when comparing materials or products with different properties (for example, 1 tonne of steel does not have the same properties as 1 tonne of concrete, and the amount used in a product to fulfil a purpose in a structure would therefore be very different).

10.2 Are you a member of the scheme or would you consider signing up to it? Why/why not?

Not Answered

Please expand on your answer here:

10.3 In your opinion, should government consider adopting or endorsing this definition/scheme? Why/why not?

Not Answered

Expand on your answer here, if needed:

Chapter 2 - Sector and Product Scope

11* How are products bought and sold in your sector and what is the demand for low emissions products? Please consider questions 11.1 - 11.4.

11.1* When selling intermediate industrial products, which sectors does your sector predominantly sell to? What is the split between government and private sector demand?

Please provide your answer here:

11.2* When buying intermediate industrial products, which sectors does your sector predominantly buy from?

Please provide your answer here:

11.3* Is there demand for lower emissions products in your sector? Which type of customers does this come from?

Not Answered

Expand on your answer here, if needed:

11.4 Is existing demand for low emissions products sufficient for businesses to invest in decarbonisation in your sector?

Not Answered

Expand on your answer here, if needed:

12 Have some businesses in your sector already undertaken some level of decarbonisation? Could new demand-side policy help consumers distinguish between products with different climate impacts?

Not Answered

Expand on your answer here, if needed:

13 Do you think that a voluntary product standard and/or product label would be sufficient to change buyers' behaviour? Why / why not?

No

Expand on your answer here, if needed:

Our view is that a voluntary scheme will not be enough to change behaviour. Financial incentives will be required to provide a clear business case, given the cost sensitivity of the construction sector. Product standards may be more effective in motivating consumers than buyers in the construction industry.

14 How do the green credentials of a product feature in buyers' behaviour and purchasing decisions? Please consider questions 14.1 - 14.7.

14.1 Which factors are most important when making purchasing decisions?

Please provide your answer here:

Green credentials have become increasingly important in buyers' decisions. However, as pointed out in chapter 1, low carbon measures come with uncertainty, depending on the system boundaries, functional units, data quality and modeller's choices. There needs to be a transparent standard and consistent modelling approach to make any green credentials meaningful.

14.2 Would you find an embodied emissions (e.g. carbon footprint, traffic-light) product label helpful?

Not Answered

Not Answered

Expand on your answers here, if needed:

14.3 Have your budget-holders and/or procurement teams received training to help assess the climate impact of purchasing decisions? Do you feel equipped to assess the climate impacts of products?

Not Answered

Expand on your answer here, if needed:

14.4 Would you find an embodied emissions (e.g. carbon footprint, traffic light) product label helpful in differentiating your product from others in the market?

Not Answered

Expand on your answer here, if needed:

14.5 Has your sales team received training to help market the climate impact of your products?

Not Answered

Expand on your answer here, if needed:

14.6 Do you have other views on how the green credentials of a product could be given greater priority by buyers?

Please provide your answer here:

Currently, the priority given by buyers in the industry is variable, ranging from a top priority to near irrelevant, because of the wide range of variables in individual and business decision-making. The government should liaise with trade associations to work closely with industry to establish how to change behaviour.

Regulatory requirements such as a tax on carbon or including carbon in a revised IED which links to the UK Emissions Trading Scheme (ETS) could help with increasing the priority given by buyers.

14.7 Bearing in mind your response to Q6.3 (Chapter 1), what other information or labelling would be helpful for differentiating and driving the market for products with a lower environmental footprint? This could include, or be instead of, embodied emissions.

Please provide your answer here:

We suggest several ideas for driving the market which we recently put forward in a qualitative roadmap for a Circular Economy for Construction Minerals submission to DEFRA, including:

- Technologies, practices and standards for appropriate end-of-service recovery of industrial by-products in circular construction materials and products
- Technologies and standards for materials recognition and tracking
- Technologies and standards for reprocessing of waste and end-of-service construction minerals
- Technologies, practices and standards for separation of composite materials
- Effective material marketplaces with full information about product sustainability and consideration of construction mineral harvesting logistics

Another suggestion would be to review regulation processes for end of waste processes and secondary materials criteria.

15 What impact could demand-side policy, such as low emissions product standards or procurement, have on your sector's supply chain, both upstream and downstream? Consider the possibilities outlined in questions 15.1 - 15.4 and include others if relevant

15.1 Could the introduction of demand-side policies adversely affect the market for specific raw or recycled materials?

Not Answered

Expand on your answer here, if needed:

Standards mandating low emissions levels via certain blending fractions of recycled materials could very easily have perverse effects in encouraging less-than-optimal behaviour across industry sectors to meet targets within construction. Performance (defined by emissions levels) is a much better approach to standardisation than prescription (defining how to reach savings). Producers are creative and intelligent; they can find low-emissions solutions without tight prescriptive standards.

A specific example is use of supplementary cementitious materials to achieve low-carbon concrete.

Clients are specifying low-carbon concrete and a straightforward way of achieving this is by use of >50% replacement of cement with ground granulated blast furnace slag (GGBS). This is a by-product from iron production, but also provides improved durability to concrete. There are instances where GGBS has been used in applications where durability is not a priority. The result is limited resource elsewhere in the supply chain, meaning projects which require more durable concrete then must use a greater cement content.

15.2 Could new policy drive cost increases for manufacturers further along the supply chain?

Yes

Expand on your answer here, if needed:

It could, but the government could use procurement to prioritise circular construction. For example, existing materials used to replace cement include GGBS and pulverised fuel ash (PFA) have changed hugely in value compared to cement. Ten years ago, cement in the UK was about 2- 2.5 times more expensive than GGBS, it is now 5% cheaper. Similarly, electricity decarbonisation has meant that PFA, which was around 20% the cost of cement, is now almost unavailable, and its price is comparable to that of cement.

15.3 Could new policy create carbon leakage risk elsewhere in the supply chain? For example through introducing new costs to parts of a sector that are not already protected through existing carbon leakage policies.

Yes

Expand on your answer here, if needed:

While it is possible for new policies to create carbon leakage elsewhere in the supply chain, these should be identified proactively where possible to address those issues in advance. This is not an adequate reason for not putting policies in place. Again, appropriate inclusion of relevant parts of the system in life cycle assessment (LCA) can help identify these risks.

15.4 How might any impacts vary based on the stringency of the low emissions definition? How might any impacts vary between domestic and non-domestic supply chains?

Please provide your answer here:

16 Do you agree that the factors discussed in Chapter 2 are key to assessing which sectors should be targeted by demand-side policy?

Not Answered

16.1 Are there other sectoral characteristics you think need to be considered?

Please provide your answer here:

For infrastructure, design life and the opportunity to design for deconstruction and reuse are key features to consider.

16.2 Would you say that some characteristics are more important than others?

Please provide your answer here:

17* Would your sector be a suitable target for new demand-side policy over the next 5-10 years?

Please provide your answer here:

18 Could a 'mandatory for UK products only' approach be a reasonable first step in rolling out new mandatory standards or labelling policy?

Not Answered

Expand on your answer here, if needed:

There is not much import of cement, but there is increasing importation of secondary cementitious materials (such as GGBS or PFA). There is an opportunity to amend programmes such as BREEAM such that only accredited materials are considered for sustainability assessments. Imported goods could still choose to be accredited.

The need to modify trade law should be considered to avoid penalising local producers vs. international competitors. Different approaches taken between the devolved administrations of the UK also need to be considered here.

19 Under what circumstances, or for which products, is it essential to target both UK production and imports from the start?

Please provide your answer here:

Cement is an example of a product which is very exposed to imports if UK producers are penalised. However, if the right incentives are put in place this could increase the domestic market for low-carbon alternatives, such as Portland cement-free concrete.

Chapter 3 - Emissions Reporting and Verification

20* What are your views on how emissions reporting could be simplified?

Please provide your answer here:

We are open to exploring how emissions reporting could be simplified to support firms, particularly small and medium enterprises, to participate. However, simplifications such as rewarding firms to resubmit data less frequently could be problematic, as this may remove the incentive to maintain commitments to lowering emissions. We suggest reporting emissions every three years as a minimum.

Centralised collection and sharing of data across industrial sectors should be considered. Fears about the business-sensitivity of shared information are likely to be at least partly unfounded and could be offset by the benefits of a more efficient system. There could be significant cost savings, as well as opportunities for simplification of report requirements and collection systems if information is shared transparently.

21 Does your sector already compile aggregated products emissions data?

Not Answered

Expand on your answer here, if needed:

21.1 If so, who is responsible for compiling and sharing this data?

Please provide your answer here:

22 To maintain accuracy and trust in the system, how frequently should product emissions data be reported?

Please provide your answer here:

23 For your sector, please submit evidence on the potential financial and administrative cost of mandatory product emissions reporting and verification for products sold in the UK. Please see questions 23.1 - 23.3.

23.1 Do you already collect the data required to measure emissions at product level?

Not Answered

Expand on your answer here, if needed:

23.2 If not, what would the potential administrative and financial impact be to do so?

Please provide your answer here:

23.3 What are your views on the practicality of measuring the product emissions of upstream and downstream inputs and processes in your business' supply chain, including those that occur overseas?

Please provide your answer here:

24* What are your views on how the embodied emissions of imported industrial products should be reported?

Please provide your answer here:

It important to consider whole life-cycle carbon rather than prioritising up-front embodied carbon. The Committee on Climate Change recommend in their Sixth Carbon Budget, that government should work with industry to agree a standard for the 'whole-life' carbon footprint of buildings and infrastructure.

Emissions could also be reported via a carbon border tax mechanism, like the proposal for a Carbon Border Adjustment Mechanism put forward by the EU.

25 What are your views on appointing a certification body?

Please provide your answer here:

Any certification body would need to be fully independent.

25.1 Which organisations are active in your sector?

Please provide your answer here:

25.2 Do you think there would be value in government alignment with these for new demand-side policy?

Yes

Expand on your answer here, if needed:

26 What are your views on existing government reporting schemes? Please consider questions 26.1 - 26.4.

26.1 Do you agree that existing reporting schemes do not provide the information necessary to calculate the emissions associated with industrial products produced and traded in the UK?

Agree

Expand on your answer here, if needed:

BREEAM is an existing reporting scheme which does not show the importance of embodied carbon and is also not a building standard. An alternative would be to introduce embodied carbon into building regulations to address this.

The Carbon Emissions (Buildings) Bill, introduced to Parliament as a Private Members Bill, would be a positive step in setting limits on embodied carbon emissions in construction if it were successful, or if the principle were to be adopted as part of other Government legislation.

26.2 What are the specific data gaps in existing schemes when it comes to assessing emissions associated with products?

Please provide your answer here:

The challenge of including embodied carbon in standards for building regulations include: a lack of commonly agreed upon carbon calculation methodology, large enough databases of buildings and realistic assessments of what is feasible given design constraints.

Moreover, the extraction of materials needs to be considered which can be done using a Life Cycle Assessment (LCA) approach.

A further consideration is how emissions are allocated between the construction sector which uses the by-products/wastes/secondary products from other sectors in large volumes such as blast furnace slag (a cement substitute which is a by-product from the iron making industry) and coal ashes.

26.3 Do you have any additional views on how existing data could be used to calculate the emissions of industrial products?

Please provide your answer here:

26.4 Do you have any additional opinions on existing government emissions reporting schemes that we should consider as we develop a new approach?

Please provide your answer here:

27 In relation to existing non-government reporting schemes, please provide evidence where applicable on the following aspects.

Please provide your answer here:

28 Do you believe there would be value in aligning any new demand-side policy data reporting framework with an existing voluntary emissions reporting scheme? If so, which? Please provide justification and how you assessed the benefits and limitations of the scheme.

Not Answered

Please expand on your answer here:

Chapter 4 - Policy Implementation

29 How should voluntary demand-side policies be designed and communicated to maximise uptake amongst manufacturers?

Please provide your answer here:

30 How should demand-side policies be designed and communicated to maximise uptake and understanding amongst buyers?

Please provide your answer here:

31 In your view, are there further environmental criteria or sustainable practices that public contracting bodies could consider in individual commercial processes? Please provide examples and explain how these could support a market for low emissions industrial products.

Yes

Please expand on your answer here:

The consultation is only focused on greenhouse gas emissions. It would be good to consider other environmental impacts alongside global warming potential, to have a full picture of low emissions productions and understand the trade-offs.

For example, a move to timber products in place of steel and concrete may have impacts on biodiversity and availability of renewable fuels.

32* When would demand-side policies ideally be introduced to best support decarbonisation of your sector or business?

Please provide your answer here:

33 What other factors should government take into account when designing demand-side policies?

Please provide your answer here: