OFICEMEN's contribution to the European Commission's public consultation on a strategy for long term EU GHG emissions reductions

The cement industry, like other energy intensive industries, will be essential in the carbon economy transition by bringing the essential materials and solutions. But the necessary conditions need to be addressed to ensure that Europe is at the forefront of the energy and industrial transformation.

However**, for the cement industry to successfully transition to a low-CO2 economy while maintaining production in Europe, certain framework conditions will need to be met, especially given long investment cycles amongst energy intensive industries and the fact that operate in highly competitive and dynamic international context.**

The transition to a low-carbon society, a circular economy and higher levels of digitisation will, under the right conditions, enable new business models or structures. These new business models or structures can potentially further strengthen existing value chains by filling in existing business gaps, deeper integration with customer value chains, creating new, dynamic links leading to entirely new value chains, and fostering innovation and employment generation.

While cement industry, like other energy intensive industries, are a part of the solution, there is **need for EU support**. The gestation time of breakthrough technologies is long, and many have not reached industrial scale demonstration level. It is important that all the technology pathways get their fair chance in view of the wide range of economics, technology readiness and development stages in the context of policy choices and financing strategies. **For most energy intensive companies 2050 is just one (large) investment cycle away from today**. This implies that the framework conditions will have to be continuously and progressively addressed within 10 years at the latest to enable low-CO2 technology investments in the right timeframe.

Moreover, **much higher levels of final electricity demand are to be expected if industrial low-CO2 technologies are deployed across the EU.** A decarbonised power sector would have a major impact on indirect CO2 emissions reductions. Indeed, for the most electro-intensive industries, decarbonized power would lead to up to 90% reductions in overall emissions. Transition to higher levels of electrification can create a virtuous cycle between the EU's renewable energy and industrial transition under the right conditions. The main goal should be access to competitively priced, abundant and reliable low-CO2 electricity on the one hand and identification of new or enhanced roles the energy intensive industries can play in facilitating the energy transition on the other hand. **Further efforts must be made to lower regulatory costs related to electricity consumption by energy intensive industries on a level playing field basis across the EU and also vis-à-vis international competitors. To carry out this, there is an urgent need to strategically map the infrastructure needs in relation to an industrial low-carbon transition.** It will be crucial to ensure not only supply security but that the new electricity supply is low-CO2 and competitively priced.

On the other hand, protection of competitiveness is vital to ensure high levels of investment and maintenance of production in the EU. **During the transition continued protection for energy intensive industries should be provided to safeguard competitiveness and investments in Europe.** A large and ambitious mission-oriented **R&D and innovation support program is needed** to accompany the most promising low-CO2 technologies to industrial scale demonstration level by 2030 at the latest and help achieve cost reductions in key enabling low-CO2 processes. It´s necessary **development of adequate financing mechanisms** to face the high cost that comes with low- CO2 process investments including

support for replacement of existing and productive assets with low-CO2 processes and a **new state aid regime** that acknowledges the size and scope of the industrial low-CO2 transition.

Finally, **a supportive and stable regulatory framework** is therefore required to ensure that energy intensive industries successfully transition to a low-CO2 economy while maintaining basic materials production, which is essential in Europe:

1/ Protection against unfair international competition towards a level playing field,

2/ Full carbon leakage protection from both direct and indirect costs of the EU ETS,

3/ A large and ambitious mission-oriented RD&I program for industrial low-CO2 technologies, including funding for industrial demonstration and scale up,

4/ Competitively priced, carbon-neutral energy,

5/ Consistency within the energy and climate policy framework to ensure that energy consumption and low-carbon policies are compatible,

6/ Reconsideration and a better alignment of the environmental state aid guidance,

7/ Industrial symbiosis and a circular economy through the effective combination of energy recovery and recycling,

8/ Streamlining of the permitting procedures allowing a timely and predictable set of infrastructures and interconnections,

9/ Transparent accounting framework for CCU across sectors and value-chains to allow business cases to emerge.

The existing framework for energy intensive industries to move ahead with enabling a low- carbon transition in Europe is unfortunately not adequate at this moment. The R&D gap towards demonstration and commercialisation of low-CO2 technologies is not fully addressed and there remain major challenges to bring down cost of new technologies. Infrastructure that could enable the roll out of new processes across Europe is barely present and the **financing instruments at EU and Member State levels to facilitate investments are insufficient.** Furthermore, **existing regulations can have a counterproductive effect.** For instance, **high and rising electricity prices as a consequence of EU and national regulations could close off the road to higher levels of electrification in energy intensive industries**. Finally, the continued importance of maintaining a competitive industrial base is not well aligned across all policy areas, leading to an important risk of investment leakage (including of low-CO2 investments).

The scenario of achieving low-CO2 economy within the Union by 2050 has direct implications on the EU carbon budget that needs to be included to identify appropriate, cost-efficient EU implementation measures.

Below, we answer some questions included in the European Commission's public consultation

1. *In your opinion, what are the biggest opportunities and challenges*

Several breakthrough technologies including novel cements are under development. Carbon capture and storage, and reuse is available at demonstration scale. The cement industry is involved in several promising research projects. It is expected that these technologies will become commercially available after 2030 as large-scale demonstration projects and education/training of the value chain are necessary before widespread use and being commercially viable.

Some technologies are at a more advance stage, but rely on a shift in market acceptance and demand. These could benefit from an increased legislative focus on demand-pull policies as well as standards and building codes providing the necessary quality assurance.

2. *Improving further the energy performance (insulation, triple glazing, etc.) of your building? Other*

Design for effective use of thermal mass, concrete's property, increases energy performance. It can be enhanced by combining with e.g. natural internal ventilation, triple glazing, insulation.

3. *Installing heating and water boilers that run on renewables? Other*

Specially designed concrete could serve as a battery for energy from renewable sources and store energy. It would then be used to power a house's electricity in times of high-demand.

4. *Installing heating and cooling equipment and use electric appliances with the best energy performance label? Other*

Increasing a house's thermal mass by using concrete means that buildings use less energy for heating and cooling, reduce peak power demand and CO2 emissions in the building use phase.

5. *Having a smart meter and consuming electricity mostly when prices are low? Other*

Specially designed concrete can be used as a battery allowing a house to use energy in times of high-demand. Enhancing thermal mass potential in a house also reduces peak power demand.

6. *What would be the preferred route to reduce these emissions in your sector?*

Routes for the cement industry to a low carbon economy: Resource efficiency (use of alternative fuels like biomass or waste materials has an immediate impact on the industry's carbon profile), product and energy efficiency, CCU/CCS, downstream measures. CCU/CCS (breakthrough technologies) and novel cements are most relevant.

7. *Do you think your sector could be further integrated with others so as to decrease emissions while increasing overall efficiency?*

Yes, through industrial symbiosis (using waste as resource for fuel and material substitution) also with construction sector by using concrete as a battery and improving building energy efficiency

8. How can opportunities and challenges (in particular related to carbon intensive sectors or regions) be addressed? What key economic transformations should the EU pursue to achieve a low carbon and resilient economy?

A new and integrated EU industrial strategy for energy intensive industries as part of a competitive low-CO2 transition is needed. This must include:

- The strategic alignment of the EU's energy and industry transitions in particular with regard to adequate and competitive supply of low-CO2 electricity to energy intensive industries.
- Smart regulatory instruments can assist with lead market creation for low-CO2 products and processes. This includes the use of public procurement and development of low-CO2 standards for products taking account a whole life cycle approach.
- During the transition continued protection for energy intensive industries should be provided to safeguard competitiveness and investments in Europe.

In the period leading to 2030, CEMBUREAU calls on policy makers to refrain from introducing any additional and transitionary measures to the ETS, whether at national or EU level, and focus on the implementation of the system reform for the period 2021-2030.

9. In the following table listing different energy technologies, please rank each option in the table below from 1 (important) to 5 (not important) on what role you think they will play in the clean energy transition (not all options need to be ranked)? Other

Specially designed concrete could serve as a battery for energy from renewable sources and store energy. It would then be used to power a house's electricity in times of high-demand.

10. On which cross-sectoral domains should R&D efforts focus in the coming decades? Is there a particular need for large scale deployment of certain innovative technologies? Is there a different role for authorities and private sector in support R&D and Innovation?

The European cement industry can reduce CO2 emissions by 80% if breakthrough technologies become widely available, such as Carbon capture and storage, and reuse (CCU/ CCS). This can be achieved by ensuring that the cement sector is eligible to investment mechanisms that leverage private funding for low-carbon innovative technologies and through the promotion of private-public partnerships (e.g. the EU-ETS Innovation Fund).

In addition, following the assessment of low-CO2 technologies under development main future R&D challenges emerge:

- The need to scale up breakthrough technologies towards demonstration and commercialisation.
- Optimal combination and integration of technologies (incl. breakthrough technologies)
- An increased focus on cost reduction.

Other focus areas for mission-oriented R&D to lower production costs for low-CO2 processes include, reducing cost of capturing and purifying CO2.

11. Which adaptation measures are of particular importance for your sector and why?

Concrete, a cement-based material, has a role in facilitating adaptation to the impacts of climate change:

- Concrete buildings and infrastructure are robust and stable, providing a safe built environment.

- Concrete can provide solutions through flood protection and prevention structures, coastal defences, hydraulic works and water management.
- Properly designed and constructed Concrete infrastructure and dams will provide solutions not only for existing generations but also for the future, due to their longevity. Furthermore, concrete works recover quickly in the event of, for example, water damage, reducing the amount of time needed to repair the affected area.
- Managing rainwater is easier ben using concrete infrastructure:
  - Sewers and drainage systems capable of coping with heavy rainfall and containing flash floods.
  - Sustainable urban drainage systems (SUDs) enable the water to filter into the ground soil and prevent overloaded drainage systems and the containment of flash floods.

12. Capture of CO2 from the atmosphere

(Re)carbonation, natural process of absorbing CO2 by hydrated cement in concrete or mortars removing CO2 from the atmosphere, makes built environment a carbon sink. See forthcoming IPCC methodology. Due to their mineral composition, concrete structures slowly react with air and gradually re-absorb CO2 over the life of the building. An innovative set of policies on the treatment of concrete as a carbon sinks it would be necessary to reach its full potential.

13. Storage of CO2

Mineralisation is a CCU option (CO2 can be reused and locked) which offers a permanent CO2 storage solution in (1) carbonation of solid raw materials, by-products, C&DW; and (2) concrete curing.

14. What type of CCU (Carbon Capture and Utilization) would lend itself to create long term storage? Are there other technologies that should also be considered? What policies do you think the EU should pursue to better help development and deployment?

The European cement industry is working on a number of CCU/CCS projects:

- CO2 capture technology and demonstration (post combustion & oxyfuel, calcium looping; direct separation)
- CCU in mineralisation or concrete curing
- CCU with other sectors in industrial symbiosis

Policy can support the development of CCU/CCS and deployment by the cement industry by:

- Internationally coordinated regulatory frameworks for CCS and cooperation with industry to significantly expand efforts to educate and inform public to build social acceptance.
- Coordination and demonstration of CO2 transport networks on regional, national, and international levels to optimise infrastructure development.
- International cooperation, for example through the United Nations Framework Convention on Climate Change (UNFCCC), to harmonise approaches for safe site selection, operation, maintenance, monitoring, and verification of CO2 permanent storage.
- Recognition of CCU (e.g. mineralisation) climate mitigation potential.

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