

Commission document *energy-intensive industries ecosystem: scenarios for a transition pathway*

CEMBUREAU RESPONSE

CEMBUREAU, the Association of the European cement industry, is pleased to provide the following comments on the Commission's questionnaire.

Comments on Section 2.1 A resilient and competitive EU energy-intensive industries ecosystem

- *What are the main challenges to ensure resilience in your specific industry or country? What are the key priority sectors, products and materials? Which steps are you and other actors taking to address them?*

The European Cement industry is part of two ecosystems: the energy-intensive industries ecosystem and construction ecosystem. As such, cement is a key enabler to a carbon neutral society through its end-product, concrete, which is a key component for renewable energy and public transport assets, and the material of choice for sustainable buildings and infrastructure of tomorrow. The cement sector employs directly 35,000 employees across the EU, and the cement-concrete value chain employs a total of about 320,000 workers.

The European cement industry sources its basic raw material, limestone, from quarries close to the 200 plants spread across the EU which are essential for the social fabric in regions and communities. In addition, the sector also recourses to other raw materials (e.g. waste used as alternative fuels in cement kilns, clay, etc.) which for most of them can be found locally. Thanks to this local dimension, the sector does not suffer from an overstretched upstream supply chain, and has shown resilience during the COVID19 crisis, during which the industry was able to continuously provide the construction eco-system with the cement needed for projects. Some specific challenges faced by the sector are however highlighted in the following question.

Overall, the impact of the COVID crisis on the cement market was between 10%-14%, as the Commission indicates, but resilience of the supply chain will depend on a continued focus on free movement of workers also in periods of a health crisis, public funding for infrastructure works and close attention to the financial health of SMEs. As the construction sector heavily depends on public works, including infrastructure, the resilience of the sector will also depend on the continuation of large projects. This is where the resilience and recovery plans and the channelling of funds to infrastructure projects and sustainable housing will have a decisive impact.

- *What other issues in relation to resilience would you propose to be considered for this pathway?*

Whilst the cement industry is mainly local and therefore not subject to international supply chain issues, it is nonetheless faced with a number of issues that can impact its resilience:

- As most of the cement is used in concrete, the sector very much depends on a healthy downstream market which consists of 11,500 ready-mix plants, most of them are SMEs. That is where resilience challenges arose, especially at the beginning of the COVID 19 crisis (first lockdown period), where many SMEs were confronted with liquidity and receivable problems.
 - During the COVID19 crisis, different approaches by Member States on quarantine obligations for workers created a shortage of human resources supply on construction sites. Measures taken by the Commission helped to smoothen out that issue and keep construction sites open.
 - Permitting procedures for certain quarries have resulted in the (temporary) closures of cement kilns and plants in some European countries, impacting both the cement and concrete industry and the entire construction ecosystem. An overall 'aligned' permitting process and permitting period for operations, taking into account the investments planned by the plant to achieve its decarbonisation targets, would add value to both stakeholders and industry.
 - High prices of energy are threatening the viability of cement production in a number of European countries;
 - When it comes to measures to facilitate decarbonisation, the sector may suffer from a shortage of materials and renewable energy that would allow to decarbonise cement production. This includes both access to biomass waste and non-recyclable waste, which are important levers to decarbonise the sector, and to alternative raw materials such as fly ash or blast furnace slag. As such, these shortages do not impact the resilience of the industry, but they do hamper its ability to decarbonise.
- *What additional or different output scenarios for 2030 and 2050 (cf. table below) would benefit the development of a resilient EII ecosystem?*

The table provided in the staff working document is heavily geared towards critical raw materials and international supply chain issues. CEMBUREAU would view the access to local raw materials (e.g. waste, or alternative raw materials) as critical elements of our decarbonisation pathway.

- *Can you provide any data or analysis on strategic foreign dependencies you face (of a given input or technology) to support the Commission's analytical work on strategic capacities and dependencies going forward? Can you provide evidence if you are stretched as a supplier of strategic inputs or technologies?*

CEMBUREAU does not have any specific input to this question.

Comments on Section 2.2 Greening of the energy-intensive industries ecosystem

- *Are the energy-intensive industries on the right track to achieve our targets (climate neutrality, biodiversity, circularity, zero pollution, social fairness)? In which areas are the action gaps between where we want to be and where we need to be greatest?*

Since 1990, the cement sector in the EU has reduced its CO₂ relative emissions by about 15%. In May 2020, CEMBUREAU published its Carbon Neutrality Roadmap setting out its (updated) ambition to reach net zero GHG emissions along the cement and concrete value chain by 2050. The roadmap sets out in detail the technological pathways to reach net zero GHG emissions along the cement and concrete value chain by 2050.

Importantly, the EU cement industry is also an enabler of decarbonisation in other ecosystems, considering the whole life cycle of products (e.g. energy savings in buildings through concrete thermal mass, concrete usage in public transport, water infrastructures and renewable energy equipment (water dams, windmills, etc.).

Circularity is an integral part of the sector's efforts to decarbonise through the use of non-recyclable waste and waste from other industries in the process of cement production. Currently, 50% of the cement industry's fuel needs are sourced from alternative fuels (non-recyclable waste and biomass waste), therewith avoiding 22.7 million tonnes of CO₂ emissions annually. In addition, the sector's end product, concrete, is fully recyclable.

The cement sector is also strongly involved in discussions on biodiversity, in relation to the preservation of biodiversity in cement quarries. Whilst these sites are the source of our products, nature conservation is at the heart of our activities. New habitats created during the rehabilitation process ensures animal and plant life, including rare and threatened species, can further prosper and flourish, thus contributing to the United Nations Sustainable Development Goal 15 "Life on lands".

Last but not least, the EU cement industry observes strict norms in terms of pollution. Each and every cement plant in the EU operates in accordance with a permit granted by the authorities in the Member States following the principles and provisions of the Industrial Emissions Directive (IED).

- *What other issues or barriers in relation to the green transition would you propose to be considered for this pathway?*

The staff working document correctly identified the key barriers in relation to the green transition. We provide below some further points related specifically to the cement sector, based on CEMBUREAU's carbon neutrality roadmap:

- Carbon Capture, Use and Storage (CCUS) will account for 42% of the CO₂ emissions reduction in the cement sector by 2050. The EU should provide continued funding to demonstrators and support the business case of the technology through State Aid and various funding measures, and a fair CO₂ accounting framework to reinforce the business case of CO₂ utilisation.
 - The development of a cross-industry CO₂ pipeline infrastructure should be a priority area for a Project of Common European Interest (IPCEI) whereby industry can bring the capture technology and cooperation of Member States is required for the permitting, public acceptance, financing and fair access rules to the pipeline and storage infrastructure;
 - To facilitate the replacement of fossil fuels by non-recyclable and biomass waste, it is imperative that waste-related policies incentivise the use of non-recyclable waste in cement kilns (for instance through bans on landfill, restrictions on exports of waste or facilitation of the waste shipments within the Member States).
 - It is important to create lead markets for low-carbon products and develop policies based on full life-cycle analysis. For instance, the recarbonation potential of concrete (whereby CO₂ is reabsorbed during the lifetime and after-life of a building, as recognized by the IPCC in its recent report) is an untapped phenomenon, which offers strong opportunities to decarbonise both the industry and Member States;
 - Carbon leakage is a major issue for the sector. EU cement imports from non-EU countries have increased by 160% over the past five years (2016-2020), and by 25% in 2020 alone.
- *What additional or different output scenarios for 2030 and 2050 (cf. table below) would benefit the development of a sustainable EII ecosystem?*

The outputs are broadly correctly identified in the table, but they will necessitate policies to be developed accordingly. CEMBUREAU would like to highlight for instance that:

- A forward looking approach is needed to support the decarbonisation of the industry with respect to electricity costs. For instance, the cement sector is not eligible for state aid under the ETS Guidelines on indirect compensation. This non-eligibility is the consequence of a

disproportionate emphasis on a high level of trade intensity whereas the focus should lie on electro-intensity. This is particularly relevant in a forward-looking approach where the decarbonization efforts in the industry will require an increased electricity demand. According to external studies (Wuppertal Institut, Agora Energiewende), implementing low carbon technologies in the cement industry will increase electricity demand by a factor of 2 to 2.5.

- A proper framework for CO₂ utilisation is needed to support CCUS. In particular, the ability for the capturing installation to deduct emissions which are captured and then re-used in carbon-based products is of crucial importance to allow such innovative uses of CO₂ to take up. Similarly, it is indispensable to develop a proper CO₂ transport infrastructure across the EU to further support the technology.
 - The improved funding instruments as parts of the ETS Directive are welcomed, but frontloading the funding available under the EU ETS Innovation Fund will be critical to help support large scale projects;
 - As mentioned above, the availability of waste and raw materials should be fully considered in the 2030 and 2050 scenarios.
- *Are there specific targets already set in the roadmaps by the different EII sectors to define where the EII wants to be in 2030 in terms of transition toward climate neutrality and in terms of circularity?*

At a 2030 horizon, CEMBUREAU's carbon neutrality roadmap anticipates a reduction of gross CO₂ emissions by 30% for cement and 40% down the value chain compared to 1990. Emissions reduction happening between now and 2030 will be largely based on existing technologies such as improvements to the thermal efficiency of cement kilns; replacement of fossil fuels by non-recyclable waste and biomass waste; use of decarbonated raw materials; lower clinker-to-cement ratios as well as increased electrical efficiency. Whilst carbon capture is expected to come into commercial use mainly after 2030, it is important to note that many CCUS pilot projects and demonstrators in development and will be in operation in the current decade.

- *What actions are required to create lead markets for low carbon products?*

A set of actions are required to create lead markets for low-carbon products:

- Incentivising the demand for these products: today, nearly all EU cement companies are putting on the market low-carbon cements, but the demand for these is proving to be limited. It is therefore important to act on the demand, either through public procurement or actions to sensibilise the construction eco-system about the existence of low-carbon cements;
 - Incentivising the production of low-carbon products: as mentioned above, a number of low-carbon cements are already available on the EU market. However, when looking at 'ultra-low' CO₂ products, the use of Carbon Contracts for Difference may play a decisive role to support the necessary roll-out of technologies such as CCUS in the case of cement.
 - Make the European Standardisation process fit for purpose. The European cement sector is among the stakeholders that have been amongst those negatively affected by the blockage of the revision process of the cement standard EN 197-1 and, more largely, by the larger governance challenges in the standardisation process. For our sector, this has resulted in a delay in placing new lower carbon cements into the single market and we were regrettably compelled to explore an alternative route for developing the new standard, which has recently been published as the non-harmonised standard EN 197-5. CEMBUREAU remains a strong supporter of the standardisation system as it is, which has the market-driven Construction Products Regulation for CE Marking as the main pillar for the construction sector.
- *What additional initiatives could facilitate secondary raw material transfer from one industry sector to another or internally within a sector? What actions are needed to boost demand and*

secure supply? Is it possible to double the circular material use rate by 2030 in line with the Circular economy action plan?

The reuse and recycling of materials by energy intensive industries should be stimulated on basis of a fair and material-neutral comparison of the environmental (including climate change) impacts of solutions over the life cycle including the end-of-life phase of materials. A true circularity approach also needs to reach beyond the life-cycle of a specific structure and assess the longevity of the composite parts. By way of example, a concrete frame and many concrete elements can be designed to last over 100 years which is often much longer than the life cycle of the overall building. Therefore, material efficiency and circularity thinking should go beyond the life cycle of the original building allowing building elements and/or the concrete frame to be reused in a future life cycle.

In setting use rates for circular material use, proper attention should be paid to the availability of secondary raw materials compared to the total raw material demand. By way of example, the recycling of concrete taking into account an average year and volume of demolition will only deliver a fraction of the total aggregates needed for the production of new concrete.

To facilitate secondary raw material transfer between sectors, a mapping of industrial sites of different energy-intensive sectors can be instrumental to promote and enhance circularity. This mapping is already done in a number of research projects for the identification of CO₂ storage sites and this work can form the foundation for an initiative to identify waste originated in one industry that could serve as input or feedstock in the manufacturing process of a plant of another sector in the vicinity of the first plant. Under the Horizon 2020 programme, this type of interaction between plants in different sectors has been promoted through, for instance, the EPOS project which developed a toolbox to quickly and easily evaluate the benefits and opportunities of industrial symbiosis on a cross-sectoral basis.

- *In addressing the challenges outlined here, how do you see the respective roles of the Commission, Member States, industry, social partners and other stakeholders? Do we need new or amended legislation, international agreements, new institutional structures, new standards, targeted funding, industry initiatives, targeted research and innovation, better communication or any other action towards a more innovative ecosystem?*

CEMBUREAU believes that a mix of measures will be needed:

- The European Commission and Member States should develop legislation that clearly supports the decarbonisation of European industries (e.g. proposed EU ETS review and CBAM). They should also take into account the many dependencies between some EU and national policies and how they can facilitate the decarbonisation of the cement industry – for instance, a ban on landfill would go a long way to decarbonise the cement sector through a greater access to waste.
- Targeted funding remains indispensable to promote breakthrough technologies such as CCUS;
- Small-scale funding projects need to be set up to foster industrial symbiosis and help sectors to identify where waste or end-of-life products from one sector can be used as input for other sectors;
- Legislation and policy at all levels needs to be material neutral as much as it needs to be technology neutral. The legislator can prescribe targets or objectives to be reached by construction materials, or buildings and infrastructure but it needs to be done without expressing a preference for one or other building material or technology. The choice of materials needs to be left to construction professionals and their customers and based on life cycle assessments over the whole lifetime including end-of-life phase.
- Communication actions may be necessary through ecosystems; typically, communicating about low-carbon cement towards large construction companies, to raise awareness among these, will support the decarbonisation of the entire value chain; a closer connection between

the actions taken under and actors involved in the energy-intensive ecosystem and the construction ecosystem would help a full value chain engagement on a truly circular construction supply chain.

Comments on Section 2.3 Digitalisation of the energy-intensive industries ecosystem

- *Which digital technologies are the most relevant for the EII ecosystem or for your specific industry? Which ones are you already applying today and which will require more time, funding and coordination?*

The cement and concrete industry is working to apply digital transformation in design, production processes, delivery of technology, and efficiency, in order to provide new data/information models across the supply chain.

In the cement manufacturing process, digitalization starts with automation of the equipment. A network of sensors and equipment is installed which forms the basis for a data collection and transferring operation which feeds into a digital monitoring of the manufacturing process. This full automation and digitalization delivers advanced process control solutions that contribute to:

- Increased productivity (reduced down-time of a plant due to clear and targeted indications of maintenance needs) and improved product quality through a measured and controlled supply of the necessary material input;
- An optimisation of fuel supply thanks to a forward looking process control and advanced sensing and data analytics systems in place;
- The remote monitoring of quarry vehicles allowing to check key parameters such as fuel consumption and operating hours.

Several companies in the cement industry are also working together with suppliers of artificial intelligence (AI) who study historical performance data of a plant by modelling the relationship between the variables in the process over a time span (e.g. two years) in order to optimize the production process going forward by providing the optimal settings for a plant at a given point in time. The cement industry is also promoting digital solutions in relations with its customers in the construction market.

An area that requires further development is establishing a digital connection between the use and end-of-life phases back to the materials design phase (to foster a “design for deconstruction” approach). More efficient materials design processes can be developed by combining data and models in different forms and from different sources.

- *What are the main barriers to uptake of digital technologies in the EII ecosystem?*

CEMBUREAU broadly concurs with the key points made in the “Strategic Research and Innovation Agenda” developed by ASPIRE/Processes4Planet. The success of digital solutions will depend on several factors:

- Training of the existing and future workforce is required to make optimal use of the emerging capabilities of digital technologies.
- Cybersecurity must be ensured. The deployment of digital technologies will increase their vulnerability to cyber-attacks, which pose significant risks for plant safety and efficient plant operations. The process industry is an important stakeholder and should play an active role in developing solutions to increase cybersecurity.
- Organisations must get ready. A digital strategy is needed to integrate digital systems and platforms in the organisational structure, set clear responsibilities and secure staff time.

- It is important to incentivise Co-creation with digital firms and industry partners to design the best solutions in a limited time, and foster technology transfer from other sectors (e.g., consumer, military, construction, finance, tourism, etc.) back to the process industries.
- *How can data collection, use and sharing (in and across sectors) be increased to improve resilience, sustainability and competitiveness of the EII ecosystem? What issues need to be tackled?*

In reference to the EPOS project described above, data collection focused on the identification of industrial symbiosis potential whereby data can be tracked and information can be shared in a secure manner could certainly contribute to increased resource efficiency and circularity between different sectors and supply chains.

- *What other issues related to the digital transition would you propose to be considered for this pathway?*

CEMBUREAU does not have any specific input to this question.

- *What additional or different output scenarios for 2030 or 2050 (cf. table below) would benefit the development of an innovative EII ecosystem?*

CEMBUREAU does not have any specific input to this question.

- *What are the implications of digital technologies for the EII ecosystem and for the main skill requirements and training needs in its sectors? How could they help increase innovation, resilience, competitiveness and sustainability? Do you see any risks in the use of digital technologies and how could these be addressed?*

CEMBUREAU does not have any specific input to this question.

- *Is policy intervention/coordination required to move forward on the use of digital technologies in EII's? If so, in which way and by which actors?*

A regulatory framework is needed to manage digital information for the whole construction sector. A European product data template – PDT for cement and concrete – should be developed to harmonize the properties to be integrated into digital systems according to their standardized specifications.

- *In addressing the challenges outlined here, how do you see the respective roles of the Commission, Member States, industry, social partners and other stakeholders? Do we need new or amended legislation, international agreements, new institutional structures, new standards, targeted funding, industry initiatives, better communication or any other action towards a more innovative ecosystem?*

Even if the cement and concrete industry has been and is developing several bottom-up initiatives in order to embrace digital transformation, support from the EU is needed, both for financing DIGIPLACE, a unique digital platform for the construction sector, and ensuring data ownership and data safety.

Comments on Section 3.1 Enabling regulatory framework

- *What more or different would be needed in order to support the transition? Which elements are missing or do you find insufficient in the current regulatory framework?*

As mentioned above, some crucial elements of the EU legislative framework are currently being reviewed, with far-reaching implications:

- The EU ETS Directive – it is imperative that the Directive truly incentivises breakthrough technologies such as CCUS, as well as CO₂ utilisation;
- CBAM – which, if well-designed, can play a key role in incentivizing third countries to drive down CO₂ emissions; in furthering that objective, a cost equalization between EU and non-EU operators is a necessary precondition for the decarbonisation and innovation investments in the sector;
- Mineralogical processes should be kept out of the scope of the Energy Taxation Directive given the use of energy both as a fuel and for mineralogical purposes which puts energy use in the cement sector at par with energy use in metallurgical and chemical processes which is out of the scope of the energy taxation Directive.

In addition to these, the following should be considered as a matter of priority:

- A review of the waste legislative framework to incentivise the use of waste in industrial processes such as cement production (Waste Shipment Directive, Waste Framework Directive);
- Down the value chain, policies truly-based on material neutrality and full life-cycle analysis – Energy Performance in Buildings Directive, Sustainable Product Initiative, Construction Product Regulation, recognition of recarbonation of concrete in Member States CO₂ accounting (buildings as a carbon sink);
- Initiatives on alternative raw materials, as described in earlier questions.

- *Which roles do the EU and the national level have in addressing this?*

Both levels are crucial for the European cement industry. The EU framework is fundamental in setting the right regulatory framework and allow for business cases for low-carbon investments to take place (carbon price, carbon leakage protection). The national level also plays a crucial role as a considerable number of CO₂ emission reduction pathways in cement are dependent on the availability of non-recyclable waste and biomass, or alternative raw materials.

The principle of ‘sincere cooperation’ between Member States and the European Union, as laid down in Article 4(3) of the Treaty on European Union, should be at the centre of European policy:

- Industry needs predictability and legal certainty for the significant investments it will carry out in pursuance of the Green Deal and its implementing legislation; national policies and administrative practices need to underpin, support and facilitate the execution of the measures taken at EU level; as referred to above, permitting procedures, public acceptance issues, cross-border infrastructure impediments need to be addressed to facilitate the low carbon transition;
- The internal market remains a centerpiece of the European project; its success depends on the correct transposition and implementation of European legislation by Member States; a failure to do so creates distortions between operators in different countries which hampers investment decisions;
- There is an increasing number of national measures, some of which are blatant violations of the free movement provisions, notified under the technical measures (TRIS) notification procedure with the Commission; this is of great concern to industry which hopes that the Commission will continue to take its role as “guardian of the Treaty” seriously, again in light of investment security.

- *How important is public procurement for your industry and how could green public procurement help create lead markets for sustainable, low-carbon and circular products?*

As mentioned above, CEMBUREAU believes that public procurement can be an important vector to incentivise the use of low-carbon cements in buildings. Today, government entities account for a major share of the global cement and concrete demand. The success of the Green Deal including decarbonation of the cement sector will be for a major part the result of the effort of greening the procurement processes of these bodies.

To be fully effective, public procurement criteria should be set at the level of the building based on a full-life cycle analysis. Public procurement policies should not seek to unduly favour one type of construction materials over others.

- *What other options, in addition to public procurement, could help the creation of these lead markets?*

As mentioned above, CEMBUREAU believes that educating/sensibilising the construction ecosystem about the existence of low-carbon cements will support the developments of these lead markets.

- *Which economic and/or regulatory instruments could support the development of new business models and support the competitiveness of sustainable solutions?*

It is important to apply circularity principles to future new building designs and introduce life-cycle thinking from a “design for deconstruction” approach. Applying the current knowledge and techniques to new buildings would deliver energy efficiency and longer life span, and incorporate a circular approach, based on durability, flexibility for future adaptation, and due consideration of reuse and recycling elements of the building. New buildings offer greater scope to be integrated in smart energy systems that can activate the energy storage possibilities of the thermal mass of the structure.

The “design for deconstruction” approach will facilitate the separation of different construction materials at the end of life with a view to their recycling and guide the management and treatment of internal spaces and walls in order to ensure optimization of the recarbonation potential of concrete, both during the life-time of a building as at its demolition.

Comments on Section 3.2 Financing of projects and activities

- *How can private investment in the EII ecosystem be better geared towards the necessary green and digital transitions?*

The cement industry is a very capital-intensive industry with installations that are often in operation for more than 50 years. The transition of this sector in the next 20 / 30 years will need at least a modification, often a new construction of all existing major installations to adapt to the circular, environmental and climate change challenges. Investments on CCUS alone represent a major financial investment for any given cement plant.

A major condition for the feasibility of these investments to happen is the long term predictability of legislation. A business case with a pay back time of 20 / 30 years cannot be based on permits that have to renewed every 5 years, EU ETS obligations that change regularly, etc. Fulfilling this condition of predictability is needed from local, regional, national and EU level authorities.

Cement manufacture is included in the EU Taxonomy as a transitional activity contributing climate adaptation and climate mitigation. All investments contributing to reaching the technical criteria as part of a company's plan should be eligible for financing by investors active in the sustainable finance market.

- *Can the framework conditions for private investments in these sectors be improved?*

Please see following question for our input.

- *Where do you see gaps in the current funding landscape which put at a disadvantage the EII ecosystem?*

An important factor in the decision-making process in companies is the pay-back period. In assessing this, companies need to have a clear picture of the private funds that will need to be invested and how much access can be done to public funding. That assessment is often fraught with difficulties related to:

- assessing consistency in funding over the life-cycle of a project (different TRL levels require access to different funding instruments),
- different approaches to type of costs covered by funding programmes (inclusion of OPEX is often a question mark)
- different timelines that apply (for instance, how to combine national funding that often needs to undergo state aid scrutiny and, in some cases, a state aid notification) with a timeline for EU funding)
- IP sharing and reporting obligations.

These elements often make it difficult to obtain a clear picture and timeframe on the amount of public funding that can complement private investment and therefore make it hard to assess the viability of the whole project.

Therefore, national and EU support schemes for energy intensive industries should be better coordinated and streamlined. A "one-stop shop approach" on a project basis would help industry in accessing public funding opportunities.

The elements referred to above are not specific to EII's. The EII ecosystem is put at a disadvantage in access to funding by the opaqueness and lack of understanding with a wide range of stakeholders on the taxonomy rules. While the taxonomy rules essentially aim to clarify which types of projects are eligible for green financing, the criteria laid down therein are interpreted by some financial institutions as legal compliance obligations for companies generally, at times resulting in a downgrading of stock-listed companies which makes their access to capital markets more difficult.

- *Is there any incoherence between different funding streams which affects the transition in the EII ecosystem, and how could this be addressed?*

As referred to above, a "one stop shop" approach is desirable and has to a certain extent already been implemented in the EU ETS innovation fund with one address for small and big projects. Combination of that single "guichet" with other funding systems/addresses would be very helpful.

- *What is the role for the public and the private sector, and for the EU, national and regional level in providing funding in support of the transition in the EII ecosystem?*

Europe is home to the key innovation processes in the global cement and concrete industry, and it is key to ensure that this continues to be the case. Public funding is needed where there is a technical or financial risk that prevents the private sector from investing against economically viable conditions, i.e. with a reasonable return on investment. That guidance needs to be kept in assessing the need and degree of public funding for the transition of the EII ecosystem. It is of further importance to keep in mind that, from a financial and accounting perspective, grants are more attractive to companies than loans.

Comments on Section 3.3 Infrastructure and energy needs

- *Where do you see shortcomings in the current infrastructure that would have to be addressed in order to support the transition of EIIs?*

A proper CO₂ transportation network is essential to allow the deployment of CCUS. Across Europe, a large number of pilot projects have been developed successfully in connection to cement plants, demonstrating the ability of different carbon capture technologies to efficiently capture (process) CO₂ emissions from cement kilns. However, in addition to continued support to improve the business case for CCUS investments, cement manufacturers will require the roll-out of CO₂ transport infrastructure to be able to re-use or store the large quantities of CO₂ which will be absorbed. This point is particularly central for the cement sector, where plants are evenly spread across the entire EU territory, and not necessarily part of “industrial hubs”.

- *Do you see any risk of stranded assets and misguided investments and how could this be prevented (e.g. through mid- to long-term roadmaps that inform investment decisions)?*

CEMBUREAU does not see any risk of stranded assets at this time.

- *Are energy providers and network operators in your view aware of increased decarbonised energy and infrastructure needs? If not, how could this disconnect be addressed?*

CEMBUREAU believes that energy providers and network operators are aware of most of the EII energy needs and they are part of the discussion with EIIs in the High Level Group on EIIs. It is important to emphasize, however, that, in developing networks, due attention needs to be paid to the development of CO₂ pipelines in addition to the development of hydrogen infrastructure.

- *In your view, are the technologies required for a resilient, green and digital EII ecosystem already available or do they yet have to be developed? Is the challenge essentially about commercial viability and scale-up or also about early-stage disruptive technologies? What is feasible and what depends on some hypothetical disruptive technology?*

For the cement industry, future technologies are known, but detailed R&D work is required to increase the TRL-levels and proceed to commercial implementation. A core challenge is to scale up these technologies, whilst still developing innovation on certain specific areas such as the innovative uses of CO₂.

- *In your view, is there sufficient emphasis on the social and demographic impacts resulting from the transformation of the EIIs, including by engaging and actively involving affected citizens and communities in addition to the social partners?*

The cement industry in itself is largely a B2B market but the Green Deal and the Roadmap developed by the sector rightfully focuses on the full supply chain and also covers concrete as the cement industry’s end-product.

As concrete is an essential building material for the construction market, the cement industry has a responsibility to engage with all stakeholders in the supply chain to address the impacts of the transition. While the cost of the building material in the overall cost of a new house is limited to 3%-5%, we are concerned by a lack of communication towards citizens:

- 85% of the EU's building stock (220 million units or 9 out of 10 buildings) predates 2001 and is not energy-efficient;
- in order to achieve the EU's climate and energy efficiency targets by 2030, 35 million building units need to be renovated by 2030;
- in order to achieve these targets, a deep renovation is often required which will mean that people will need to temporarily leave their home during the works and pay rent for a place to stay;
- some governments are thinking of imposing requirements not only for new construction but also for existing homes; the premiums under discussion with governments (e.g. EUR 20,000 in Flanders (Belgium)) are largely insufficient to cover the costs of a deep renovation;
- prospective buyers of a house need to be aware that they will be asked to invest in energy efficiency and need to factor that into their purchase price.

In addition, targeted work at social partners level could also be reinforced. The transition will require a major and sustained reallocation of labour across sectors, occupations and regions as well as significant investment in re- and up-skilling, retention of existing workers and attracting new workers.

Comments on Section 3.4 Skills, training and just transition

- *In your view, what are the main social and just transition challenge connected to the EII ecosystem's transition, and how do you see their scale?*

The challenge connected to the EII ecosystem's transition will be in retaining workers and attracting new skilled workers.

- *Do you have precise projections of the employment and reskilling needs for your sector and what actions are you taking?*

We do not have concrete projections of the employment in the cement and concrete sectors for 2030 and beyond. What we project is an increase of the complexity of cement production and concrete production and use due to the ambitions on climate and environmental impact from the EU Green Deal, for which we expect associated consequences for the employment and needed skills of the workers in the sectors.

- *Does the just transition agenda put sufficient emphasis on the needs of affected citizens, including workers but also their families and especially young people, as well as the communities, and regions they live in? If not, how could these be addressed?*

Not necessarily, communication might not reach the impacted citizen but we do see a role for regional authorities to engage with relevant stakeholders (industry and social partners) in an outreach efforts to the larger citizen community.

- *To what extent do you think will up/re-skilling be achieved in your industry and in your region?*

Up/re-skilling is in the domain of the companies. Upskilling is part of the training and education programs in the cement companies as new business models and technologies are being developed.

- *In your view, what will be the distributional impacts of the EII ecosystem's transition – across the whole population (not only for persons working in EII) – on disposable income, energy*

poverty or access to some essential services? What could be relevant measures to address and mitigate these distributional impacts?

The transition of the EII ecosystem cannot be seen separately from the transition of other ecosystems such as, for the cement industry, the construction ecosystem. Throughout the value chain, there needs to be a cooperation to educate, communicate and raise awareness of citizens on how to access financial assistance for the transition and how such transition will ultimately reduce their energy consumption and costs.

- *Which roles can the Commission, Member States, social partners, industry, trade unions and other stakeholders play to master the transition in a just and socially fair way?*

Everyone has a role to play in communicating, contributing to and supporting a just transition and ensure that the transition is managed in a socially responsible manner.

Comments on Section 3.5. Awareness raising and communication

- *Where do you see the main challenges in terms of communication and transparency?*

The communication and transparency on the product that is cement is well established and improving. However, the communication on the impact of the EII on the population and their key roles in the local economy have to be further improved.

- *What are the main target audiences? Which actors can help to achieve a more inclusive and fact-based debate?*

Each group of the population shall be targeted according to age, sectors, use of energy. Regions and Municipalities can help in the debate.

- *Which specific actions could the Commission, Member States, the industry, social partners and other stakeholders take?*

Everyone has a role to play in communicating, contributing to and supporting a just transition and ensure that the transition is managed in a socially responsible manner.

- *Would you have any examples or good practice tools to share?*

CEMBUREAU does not have any specific input to this question.

Comments on Section 3.6. Thematic stakeholder meetings and governance

- *Where do you see need for additional consultation or cooperation on the EII transition pathway, besides what is foreseen within the established stakeholder groups and partnerships described above?*

There is a variety of fora where the EII's transitional pathways are discussed, including the Industrial Forum, the High Level Group on EII's, the SET Plan, the High Level Construction Forum, the dialogue with DG RTD on the Strategic Research and Innovation Agenda (SRIA). In addition, some of our industries are represented in the CCMI (Employers Committee) of the Economic and Social Committee. We do regret not being included in the Sustainable Finance Platform which also works

on transition pathways of EEs through the setting up of new criteria and the review of existing ones without the cement sector's input.

We do not see a need for additional forums at this point in time but we do insist on a closer exchange of information between these different groups. The HLG on EII's has developed a Masterplan for the transformation of the industry which still forms the basis for today's discussion when it comes to identifying the decarbonization efforts by the industry, the energy and market challenges and the regulatory framework needed. The SRIA, referred to above, devotes large sections to the upskilling challenges and to digitalization which are also addressed in this questionnaire.

- *On which areas should international cooperation focus?*

International cooperation needs to focus essentially on:

- A better understanding of transition pathways and measures taken in other countries (timing, sectors covered, mechanisms applied, public financing available) in order to better assess the potential to drive down emissions globally;
- Best practice sharing on technologies available, funding mechanisms applied for their development and deployment;
- Best practice sharing on upskilling programs and raising citizens' awareness.

Comments on Section 3.7 Key performance indicators

- *Which KPIs should be used to assess the progress towards our transition objectives from each of the Commission, Member States, the industry, social partners and other stakeholders?*

CEMBUREAU's roadmap contains a number of KPIs (e.g. % of usage of non-recyclable waste and biomass waste in cement production, clinker-to cement ratio, etc.) which would be useful for the decarbonisation of the sector.

- *What are the data sources?*

In the present case, CEMBUREAU's roadmap includes the relevant KPIs.
