Carbon Border Adjustment mechanism
Submission
October 27th, 2020
The European cement industry will be key to the Green Deal and EU economy provided the industry is able to make significant investments

The cement industry is key to the European economy

- 200 plants
- 180 m tons produced
- 135,000 Total jobs incl 35,000 direct jobs
- 2.8 Multiplier effect in the EU Economy

Key applications in Construction, Energy and Transportation

Role in circular economy

The EU Green Deal needs cement contribution to succeed

"Cement [is] indispensable to Europe’s economy, as [it supplies] several key value chains.

EC Green Deal

Construction

Cement enables to build zero-emissions / negative emissions buildings thanks to high isolation standards

Energy

Most low-carbon energy generators need cement in their construction process: wind mills, water dams, cogeneration and hydrogen plants etc...

Transportation

Public mass transportation in cities (subway, tramways) as well as rural areas (railway incl. high speed) need cement

Positive impact of the industry on social well-being through construction of hospitals, schools

The cement industry will be key to achieve the EU Green Deal as it contributes to critical steps in the wider ecosystem of construction and energy. However, this significant contribution to the EU Green Deal can be achieved only if:

- The cement full value chain remains in the EU in the coming years
- Cement plants keep being present across all EU territories, fully aligned with the local construction industrial ecosystem
The European cement industry’s increasing role in the circular economy will also be key to the Green Deal

**CO2 emissions avoided through the use of non-recyclable waste and biomass waste to replace fossil fuels (MT, EU28, 1990-2018)**

- The European cement industry plays a key role in the circular economy by increasing the European capacity to value waste
- Indeed the European cement industry has significantly improved its energy consumption over the past decade, reaching 48% of thermal energy from alternative fuels in 2018 versus 22% in 2008
- As a result, 22 millions tons of CO2 were not emitted in 2018, representing a +55% saving increase compared to 2008
After large improvements in CO2 emissions, the cement industry needs a level playing field to be able to finance decarbonization investments.

The EU Cement industry is willing to achieve full decarbonization by 2050 (CEMBUREAU Roadmap)

Since 1990, the EU cement industry has reduced CO2 relative emissions by ~15% and is targeting 0 emissions by 2050.

<table>
<thead>
<tr>
<th>Current share of cement industry out of EU ETS stationary installations direct emissions (MT, 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,682</td>
</tr>
<tr>
<td>Cement: 7%</td>
</tr>
</tbody>
</table>

The sector decarbonization needs significant investments, enabled by viable business cases in the EU

The CEMBUREAU Roadmap addresses the technology and innovation levers the industry is focusing on to reduce its CO2. The industry needs to invest heavily in breakthrough technologies on its path to achieving carbon neutrality.

It is of crucial importance that these investments can take place in a competitive environment which is not distorted by factors that weigh unequally on European producers and third country producers.

Previous ETS periods were designed to reduce the risk of relocation through free allowances but not at the imports of carbon intensive products into the EU.

A Carbon-Border Adjustment Mechanism (CBAM) can effectively prevent the import of carbon-intensive products and establish a level playing field between EU and 3rd countries.

The co-existence of free allowances and CBAM will meet the two objectives and ensure EU players are able to fund decarbonization investments.

Source: EU Green Deal, EC, GNR, CEMBUREAU, PwC Strategy & Analysis

Strategy & Analysis

October 2020

2018 Cement: 7%

Current share of cement industry out of EU ETS stationary installations direct emissions (MT, 2018)
As ETS phase IV (2021-2030) impacts are significant, introducing CBAM in addition to free allowances is key to ensure full contribution of the sector to the EU Green Deal

ETS phase IV will result in increased carbon costs for the industry,

• Under current ETS phase IV forecasts, carbon costs of the cement industry would reach up to €Bn 5.3, representing up to 28€/t (as a comparison, domestic prices EU28 average is set at 75.2€/t in 2019).

• A large portion of the EU territory would be suffering from high carbon leakage as importers would be more profitable than domestic players.

Carbon leakage will be exacerbated by ETS phase IV, with significant effects on jobs and CO2 emissions*

Aggravated carbon leakage would have the following impacts:

• **Closures of plants and jobs destructions** (20,000 jobs in the EU28) and additional CO2 emissions (+4.5 million tons in 2030) as plants are relocated outside the EU

• **Inability for EU cement players to finance the decarbonization investments** necessary to achieve the CEMBUREAU 2050 roadmap

A well-designed Carbon Border Adjustment Mechanism should establish a level playing field, enabling a viable business case for decarbonization investment

• An efficient CBAM would be designed as a **tax** applied to imports, covering direct and indirect CO2 costs and applicable to all 3rd countries.

• A specific CO2 charge exemption can be designed to pay back carbon costs for export products as part of CBAM

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* Figures for the medium case - GHG Goal of -55% in 2030 vs. 1990, CSCF starting at 73% in 2024 and 43% in 2030, and free allowances until 2030

Source: CEMBUREAU, PwC Strategy& Analysis

October 2020
Only the co-existence of CBAM and free allowances can ensure the long-term viability of the European industry and its future contribution to the Green Deal.

EU ETS with free allowances provides investment framework for companies until 2030 and it is therefore essential it remains in place

- Cement companies have set out ambitious CO2 reduction plans aiming at carbon neutrality along the value chain by 2050
- The investments needed need to be decided in long-term investment cycles (30-40 years)
- Therefore, predictability is key

Surging imports in the EU coupled with capacity build-up at EU borders brings in clinker and cement not subject to CO2 constraints

- Capacity utilization in neighbouring countries between 40%-60%
- Doubling of imports in the EU
- Uneven costs because of CO2 imposed on EU producers

CBAM will be able to successfully address imports from third countries with no carbon constraints

Free allowances and a well-designed CBA can co-exist to take both aspects of carbon leakage and allow EU companies to invest in carbon neutrality
As free allowances decrease in the ETS phase IV period, the EU cement players are to pay increasing carbon costs (up to €Bn 5.3 in 2030)

**Emission ratio and free allowances (kgCO2/t clinker)**

**1st case: Current Goals**
(GHG Goal of -40% in 2030 vs. 1990, CSCF 100% in 2021-25 and 90% in 2030, and free allowances until 2030)

<table>
<thead>
<tr>
<th>Year</th>
<th>EU direct emission ratio</th>
<th>Free allowances</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>793</td>
<td>732</td>
</tr>
<tr>
<td>2022</td>
<td>786</td>
<td>731</td>
</tr>
<tr>
<td>2023</td>
<td>779</td>
<td>731</td>
</tr>
<tr>
<td>2024</td>
<td>772</td>
<td>731</td>
</tr>
<tr>
<td>2025</td>
<td>766</td>
<td>731</td>
</tr>
<tr>
<td>2026</td>
<td>759</td>
<td>732</td>
</tr>
<tr>
<td>2027</td>
<td>752</td>
<td>732</td>
</tr>
<tr>
<td>2028</td>
<td>745</td>
<td>732</td>
</tr>
<tr>
<td>2029</td>
<td>739</td>
<td>732</td>
</tr>
<tr>
<td>2030</td>
<td>732</td>
<td>732</td>
</tr>
</tbody>
</table>

**2nd case: Higher GHG reduction**
(GHG Goal of -55% in 2030 vs. 1990, CSCF starting at 73% in 2024 and 43% in 2030, and free allowances until 2030)

<table>
<thead>
<tr>
<th>Year</th>
<th>EU direct emission ratio</th>
<th>Free allowances</th>
</tr>
</thead>
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<tr>
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<td>766</td>
<td>731</td>
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<tr>
<td>2026</td>
<td>759</td>
<td>732</td>
</tr>
<tr>
<td>2027</td>
<td>752</td>
<td>732</td>
</tr>
<tr>
<td>2028</td>
<td>745</td>
<td>732</td>
</tr>
<tr>
<td>2029</td>
<td>739</td>
<td>732</td>
</tr>
<tr>
<td>2030</td>
<td>732</td>
<td>732</td>
</tr>
</tbody>
</table>

**Total carbon cost (€/t cement)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Direct emissions</th>
<th>Indirect emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>0.8</td>
<td>0.9</td>
</tr>
<tr>
<td>2022</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>2023</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>2024</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>2025</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td>2026</td>
<td>3.7</td>
<td>3.6</td>
</tr>
<tr>
<td>2027</td>
<td>4.6</td>
<td>4.5</td>
</tr>
<tr>
<td>2028</td>
<td>5.6</td>
<td>5.5</td>
</tr>
<tr>
<td>2029</td>
<td>6.8</td>
<td>6.7</td>
</tr>
<tr>
<td>2030</td>
<td>8.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

With the forecast ETS phase IV period, the carbon costs of the cement industry would reach up to €Bn 5.3, representing up to 28€/t (as a comparison, domestic prices EU28 average is set at 75.2€/t in 2019).

EU manufacturers are weakened by increased carbon costs as non-EU players are not charged similar regulation costs.

EU players are increasingly less competitive than non-EU players on domestic and international markets.
As import routes are increasingly profitable, production and capacities are relocated outside the EU, increasing carbon leakage.

Following carbon costs increase, manufacturers from 3rd countries will become profitable on the EU territory. This leads to carbon leakage: increasing imports and decreased exports on international routes unless specific mechanisms are implemented.

Analyses include both cement and clinker:
- Depending on the product most imported per country, routes were modelled shipping either cement or clinker.

EU28 net trade balance of cement (MT)

Potential future trends in cement manufacturing

Destruction of plants and jobs in the EU

Creations of capacities in neighboring non-EU countries: Eastern Europe, Middle East, Africa

Source: Eurostat Comext, PwC Strategy& Analysis
Carbon leakage impact is reinforced by third countries increasing their capacities at EU borders

Main imports volume and routes from 3rd countries into the EU (kT, 2019)

- Significant progression of imports to the EU: +100% in volume since 2016
- Main exporters to EU are neighbouring countries: Maghreb, Middle East and Eastern countries

Carbon leakage impact is expected to worsen in the next years:

- Neighbouring countries built capacities to export more to the EU
  - 70MT increased capacity in third countries between 2018 and 2025, representing c. 35% of EU yearly total production
- New business model are being set up: increased grinding capacity across EU close to borders for import of clinker
- EU ports have capacity to import clinker and cement
- Neighbouring countries are incentivized to export because of their low costs
  - Current capacity utilization is 40% to 60%: third countries cover their fixed costs and export on variable costs

Legend:
- 2019 Imports from 3rd countries of Cement and clinker (kT)
- Main EU Imports from 3rd countries

Source: Eurostat, PwC Strategy& analysis

(1) Cement products refer to NACE code 2351 regroups aluminous cement, blast furnace cement, cement clinkers, cement (whether or not coloured, excl. portland cement and aluminous cement), cement (whether or not coloured, excl. portland cement, aluminous cement and blast furnace cement), portland cement (excl. white, whether or not artificially coloured) and white portland cement (whether or not artificially coloured)
A large portion of the EU territory will be facing an exacerbated carbon leakage by 2030 as EU manufacturers carbon costs keep increasing.

**Carbon leakage impact for the cement industry (2021-30)**

**1st case: Current Goals**
(GHG Goal of -40% in 2030 vs. 1990, CSCF 100% in 2021-25 and 90% in 2030, and free allowances until 2030)

**2nd case: Higher GHG reduction**
(GHG Goal of -55% in 2030 vs. 1990, CSCF starting at 73% in 2024 and 43% in 2030, and free allowances until 2030)

Bordering countries are facing higher carbon leakage in both scenarios: Southern (Spain, Portugal, France, Italy, Greece) and Central and Eastern EU countries (Poland, Bulgaria, Romania), Baltics and Finland.
CBAM provides an opportunity to reduce overall CO2 emissions and support decarbonization of the EU economy

Impacts of carbon leakage (EU28, 2030)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Year</th>
<th>Production (mT)</th>
<th># Total Jobs</th>
<th>CO2 Emissions suppl. (kT)</th>
<th>Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>2019</td>
<td>193(1)</td>
<td>~135 000</td>
<td>120,000</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>without CBAM</td>
<td>2030</td>
<td>-39.4</td>
<td>-9,600</td>
<td>+2,200</td>
<td>-34</td>
</tr>
<tr>
<td>2nd case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>without CBAM</td>
<td>2030</td>
<td>-84.0</td>
<td>-20,500</td>
<td>+4,640</td>
<td>-69</td>
</tr>
<tr>
<td>1st Case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with CBAM</td>
<td>2030</td>
<td>-16.3</td>
<td>-4,500</td>
<td>+900</td>
<td>-16</td>
</tr>
</tbody>
</table>

Even in case of a CBAM, the EU cement industry is still facing carbon leakage due to price and costs trends in the EU

- The CBAM can only preserve jobs and plants in case it is designed to effectively mirror carbon costs supported by EU players
- The CBAM should be applied as soon as possible to help maintain capacities in the EU and sustain necessary decarbonization investments for the implementation of the CEMBUREAU roadmap (0 emissions by 2050)

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(1) 193MT is the total EU cement production from GNR (incl. EU28 + Norway + Switzerland) but the impact study does not include Switzerland
Source: Eurostat, GNR, EUTL, PwC Strategy & Analysis

October 2020
Without a CBAM, the carbon leakage will hit particularly the Southern and Southeastern European economies, resulting in jobs losses.

Estimated impacts in jobs, production and sites (2030, 1st case and 2nd case)

Scenario used in modelling:
- CO2 price (t/€): 30-80
- GHG Red. Goal: -40% (1st case) and -55% (2nd case)
- Base CSCF Factor: 100% (1st case) and 78% (2nd case)
- Free allowances until 2030

Figures presented by geographical zone (impact from 1st case to 2nd case)

- **Northern Europe**
  - -0.8 to -1.8 mT
  - -43

- **Western Europe**
  - -3.7 to -15.5 mT
  - -9 to -2,200
  - -2 to -11

- **Eastern Europe**
  - -4.3 to -14.8 mT
  - -400 to -500
  - -1 to -2

- **Southern Europe**
  - -19.0 to -36.9 mT
  - -5,900 to -12,800
  - -23 to -46

- **Southeastern Europe**
  - -11.7 to -15.0 mT
  - -3,400 to -4,800
  - -7 to -9

*Source: EUTL data, PwC Strategy& Analyses*
The CBAM design as a carbon tax enables operational and legal enforceability in the short run to effectively mitigate carbon leakage

**Potential CBAM designs**

<table>
<thead>
<tr>
<th>Tax applied on imports</th>
<th>Mirror ETS System</th>
<th>ETS Inclusion</th>
<th>Consumption Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Operationally and legally enforceable (WTO regulations)</td>
<td>✓ Safeguards the ETS system from disruptions and covers imports</td>
<td>✓ Equal conditions for EU and non-EU manufacturers</td>
<td>✓ Covers imports and exports Enables monitoring of carbon price</td>
</tr>
<tr>
<td>✗ Doesn’t cover exports Mechanism to be carefully tailored with WTO regulations</td>
<td>✗ Complex to implement (# of allowances, controls outside the EU)</td>
<td>✗ Complex to implement (# of allowances, controls outside the EU)</td>
<td>✗ Complex to implement (including setting of base charge)</td>
</tr>
</tbody>
</table>

**Proposed CBAM for imports** (see exports p15)

The CBAM would have the following characteristics:
- **Format:** Tax applied on imports to the EU or Mirror ETS system
- **Scope:** Direct and indirect emissions
- **Differentiation:** the default value of tax applicable for all 3rd countries matches the WTO compatibility without recourse with GATT Article XX. In case countries / plants are able to claim reduced tax due to lower emissions or existing carbon trading schemes, a differentiation could be implemented if in-depth and independent audits of the specificities of each are performed.

Such a design would ensure the tax accurately mirrors the carbon costs supported by an average EU manufacturer.

<table>
<thead>
<tr>
<th>Default emission value (tCO2/t)</th>
<th>EU average* (minus free allowances for direct CO2)</th>
<th>Quantity of CO2 allowances to be obtained by average EU manufacturer – non-discriminatory as to WTO regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Value of Tax</td>
<td>CO2 price (€/tCO2)</td>
<td>It could be envisaged in a later stage to offer low-carbon emitter third countries the possibility to reduce their CBAM tax by proving their real emission level</td>
</tr>
<tr>
<td>ETS net carbon price (direct and indirect)</td>
<td>ETS price non-discriminatory</td>
<td></td>
</tr>
</tbody>
</table>

The default carbon tax would be paid by any importer when products are shipped into the EU territory, with conditions similar to duties paid to Member States customs. It covers imports only.
A CBAM would limit the carbon leakage costs on the EU territory in all scenarios but borders of the EU would still be impacted.

**Carbon leakage impact for the cement industry with a CBAM (2021-30)**

As the CBAM is designed to cover the EU manufacturer carbon costs, the carbon leakage is similar across scenarios. The modelling supposes the CBAM is implemented from 2023 on. As the CBAM is by design applied via an equivalent amount to EU average costs, the carbon leakage wouldn’t evolve across time despite increase in carbon costs.

The CBAM would mirror the EU manufacturers average carbon costs, building a level playing field between EU and non-EU manufacturers.

As such, the CBAM would have positive impact on jobs, CO2 emissions and production in the EU.

However, the CBAM should be implemented as early as possible to prevent plants closures and help EU players finance decarbonization investments.

It could be envisaged in a later stage to offer low-carbon emitter third countries the possibility to reduce their CBAM tax by proving their real emission level.

**A CBAM would saveguard by 2030:**
- 5100 to 16000 jobs (direct and indirect)
- 1300 to 3740 kt CO2 emitted

**Legend**
- No
- Low/Medium
- High

**1st and 2nd Cases**

- **2021**
- **2026**
- **2030**
A specific CO2 charge exception can be designed to pay back carbon costs for exports products as part of CBAM (similar process as VAT in Europe)

Proposed CBAM scheme (illustrative)

Without CBAM, the non-EU manufacturer doesn’t support regulation / carbon costs as the EU manufacturer.

The non-EU Player is more competitive due to the EU ETS on export markets.

**CBAM for exports: paying back carbon costs to exporter**

- The EU is mainly exporting from Southern Europe to Northern America and Africa but **EU players are losing ground to non-EU manufacturers**, especially in the Middle East
- A CBAM would have the **EU pay back actual carbon costs to the manufacturer / exporter** (average for the previous year) when leaving the EU territory
- The CBAM should include total costs (direct + indirect) for all ETS sectors.
- As for the CBAM design, this CO2 charge exception for exports would co-exist with free allowances, i.e. pay back the carbon costs which are paid on top of benchmark
The competition distortion on export could be responsible for up to ~2,700 job losses and ~ 450 ktons of additional carbon emissions in 2030

Estimated impacts on exportations in jobs, plants and CO2 emissions (2030, 1st case and 2nd case)

Scenario used in modelling:
- CO2 price (€/t): 30-80
- GHG Red. Goal: -40% (1st case) and -55% (2nd case)
- Base CSCF Factor: 100% (1st case) and 78% (2nd case)
- Free allowances until 2030

Figures presented by geographical zone (impact from 1st case to 2nd case)

- Additional CO2 emissions due to carbon leakage (thousand tons)
- Job losses (direct + indirect)
- Plant closures

Source: Eurostat Comext, Eurostat Prodcom, PwC Strategy & Analyses

Carbon Border Adjustment mechanism
October 2020
Even with a CBAM, investment leakage remains and industry requires assistance on its path to carbon neutrality

**In the short term**
- It is very important to **stabilize and give visibility to the investors** so that they can make the **investment expected in the roadmap to support decarbonization**
- To follow the roadmap, investments should be decided rapidly, therefore the European industry needs a **pragmatic framework defined at the beginning of ETS phase IV**
- Investments will have regard to: (i) financing for breakthrough technology innovation; (ii) use of revenue from the tax for assisting the path to carbon neutrality for industry; (iii) new financing models such as contracts for difference

**In the medium term**
- Need for **new mechanisms** such as the **consumption charge**: they may be **more complex** but would have a **more durable and less trade conflictual character**
- CEMBUREAU is keen to discuss the design of such future mechanisms **with the European Commission in the future**
• Back-up slides (key hypotheses used in modelling)
Several hypotheses (cement production, emission ratios) have been used to modelized carbon costs evolution in the ETS phase IV period.

**Cement production in Europe (in million tons)**

- Domestic production
- Export

**CO2 emissions of production**

**Direct emissions ratio (kgCO2/t clinker)**
- 2017: 813
- 2030: 732

**Benchmark ratio (kgCO2/t clinker)**
- 2021-25: 707
- 2026-30: 688

**Indirect emissions ratio**
- 2016: 0.296
- 2030: 0.200

**Cement to clinker ratio (%)**
- 2021: 75.5%
- 2030: 74%

**Cement plan power consumption**
- 2021-30: 116 KWh/t

Nota: for some analyses such as actual direct emissions, data exclude Iceland and Liechtenstein. Source: Cembureau, GNR data, PwC Strategy analysis.
The carbon leakage impact is assessed based on the profitability of importers of 3\textsuperscript{rd} country products in each EU region / plant.

### Illustration of profitability analyses

![Map showing profitability analyses](image)

**Arrival port for imported cement/clinker from non-EU**

**Import routes**

- **Non-EU importer** has a potential 10€ profit when unloading in EU port (Profit = Domestic local price – importer’s production and transport costs)
- 10€ is the transport cost for 100km
- Potential areas impacted by carbon leakage are the territories 100km distant from Eu port (colored regions)

**Modelled import routes**

- Maghreb $\rightarrow$ Southern Europe
- Middle East $\rightarrow$ Southern Europe
- Middle East $\rightarrow$ Western Europe
- Non-EU Eastern $\rightarrow$ Eastern Europe

The carbon leakage impact has been assessed based on a selection of trade routes based on past and existing trade patterns.

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**Heatmap of carbon leakage impact**

**Legend**

- No
- Low/Medium
- High

**In areas colored in grey,** the model predicts there is **no impact of carbon leakage** for defined year and selected scenario.

**In areas colored in red,** the model predicts non-EU manufacturers would benefit from a large profit (prices higher than combination of production and transport costs), which creates a **higher carbon leakage**.

**In areas colored in yellow to orange,** the model predicts there is a **low to medium impact of carbon leakage**.

**Carbon Border Adjustment mechanism**

Source: PwC Strategy & Analysis

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October 2020
A selection of ~20 imports trade routes has been analysed, based on current trade patterns and potential new routes.

Selection of trade routes (3rd countries to the EU) for heatmap modelling

**Seaborne imports**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>France, South East</td>
<td>Clinker</td>
</tr>
<tr>
<td>Morocco</td>
<td>UK, South East</td>
<td>Clinker</td>
</tr>
<tr>
<td>Morocco</td>
<td>Spain, South</td>
<td>Clinker</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Italy, South</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Ireland, West</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>France, South East</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>France, West</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Spain, East</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Spain, East</td>
<td>Cement</td>
</tr>
<tr>
<td>Middle East</td>
<td>Portugal, West</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Portugal, West</td>
<td>Cement</td>
</tr>
<tr>
<td>Middle East</td>
<td>Belgium, North</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Italy, North West</td>
<td>Clinker</td>
</tr>
<tr>
<td>Middle East</td>
<td>Greece, Islands</td>
<td>Cement</td>
</tr>
<tr>
<td>Middle East</td>
<td>Bulgaria, East</td>
<td>Cement</td>
</tr>
<tr>
<td>Middle East</td>
<td>Romania, East</td>
<td>Clinker</td>
</tr>
</tbody>
</table>

**Land imports**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belarus</td>
<td>Latvia, South</td>
<td>Cement</td>
</tr>
<tr>
<td>Belarus</td>
<td>Lithuania, South East</td>
<td>Cement</td>
</tr>
<tr>
<td>Belarus</td>
<td>Poland, East</td>
<td>Cement</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Poland, South East</td>
<td>Cement</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Romania, North</td>
<td>Cement</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Hungary, North East</td>
<td>Cement</td>
</tr>
<tr>
<td>Middle East</td>
<td>Bulgaria, South East</td>
<td>Cement</td>
</tr>
<tr>
<td>Russia</td>
<td>Finland, South</td>
<td>Cement</td>
</tr>
</tbody>
</table>

Carbon Border Adjustment mechanism

Strategy&

Note: Includes current trade routes and potential future trade routes
Source: Eurostat Comext, CEMBUREAU members, Strategy& Analysis

October 2020
The impacts (carbon leakage and associated externalities) have been modelled based on importer profits compared to EU producers

**Importer profit analysis to determine impact on plant**

- Domestic price is assumed to increase similarly to domestic costs (conservative option as manufacturers might not be able to pass through all costs)
- For all regions and plants in the EU, the profit has been computed to determine if the region/plant is impacted by carbon leakage (cf. heatmap)

**Modelling takes into account**
- Dynamic pricing as EU players are incentivized to reduce price (to the detriment of profit) to sustain volume / capacities until their own profit reaches 0.
- When profit gap is significant, it leads to the capture of market shares by the importer. It could lead to a plant closure when minimum capacity utilization is reached.
- The impacts on production, GVA and evolution of CO2 emissions has been computed.