

# EU ETS & CEMENT

HOW DID WE GET TO THIS POINT?


OCTOBER 2019




**Cement  
Business  
Research**

## TABLE OF CONTENTS


1.0 INTRODUCTION	5
1.1 Why This Report Now?	5
1.2 Why Should You Read This Report?	6
1.3 A Short Background	7
2.0 CEMENT PROCESS AND CO <sub>2</sub> EMISSIONS	9
2.1 Sources of CO <sub>2</sub> in Cement Manufacturing	9
2.1.1 Process (Raw Materials Decarbonation)	10
2.1.2 Fuel Combustion	11
2.1.3 Relative Proportion of CO <sub>2</sub> Sources	11
2.2 Technology of European Cement Plants and CO <sub>2</sub> Implications	12
3.0 WHAT IMPACTS CO <sub>2</sub> EMISSIONS IN THE CEMENT SECTOR?	14
3.1 Raw Materials Impact on CO <sub>2</sub> Emissions	14
3.2 Fuel Combustion Impact on CO <sub>2</sub> Emissions	14
3.2.1 Alternative Fuels and CO <sub>2</sub> Emissions Monitoring	14
3.2.2 How Can Producers Reduce CO <sub>2</sub> From Fuels?	15
3.3 Grinding Processes - Clinker Substitution	17
4.0 CARBON CREDITS IN THE EUROPEAN UNION – BACKGROUND	18
4.1 Introduction – Phases of EU ETS	18
4.2 Cement Plant Operations Prior To The 2007-2008 Crisis	22
4.3 What Happened between 2008 and Today?	24
4.3.1 Cement Markets, Operations and CO <sub>2</sub> Allowances From 2008 to 2018	30
4.3.2 Cement Markets, Operations and CO <sub>2</sub> Allowances From 2018	32

[Click here to return to report main menu](#) 

5.0 COUNTRY BY COUNTRY ANALYSIS	34
5.1 Germany	36
5.2 Spain	39
5.3 Italy	41
5.4 Poland	44
5.5 France	46
5.6 United Kingdom	49
5.7 Greece	52
5.8 Romania	54
5.9 Belgium	56
5.10 Portugal	58
5.11 Ireland	60
5.12 Czech Republic	62
5.13 Austria	64
5.14 Sweden	66
5.15 Denmark	68
5.16 Slovakia	70
5.17 Croatia	72
5.18 Bulgaria	74
5.19 Hungary	76
5.20 Cyprus	78
5.21 Norway	80
5.22 Finland	82
5.23 Lithuania	84
5.24 Latvia	86

[Click here to return to report main menu](#) 

5.25 Slovenia	88
5.26 Luxembourg	90
5.27 Estonia	92
5.28 Netherlands	94
6.0 CONCLUSIONS OF COUNTRY BY COUNTRY ANALYSIS	96
6.1 Production Versus Capacity and Exports/Imports Balance	96
6.2 Plant Closures	97
6.3 Estimated Financial Impact of CO <sub>2</sub> on the Sector	99
6.4 European Performance on CO <sub>2</sub> Reduction between 2005 and 2018	100
7.0 THE ECONOMICS OF A CEMENT PLANT WITHIN THE EU ETS (2019 and 2020)	104
8.0 CONCLUSIONS	107
9.0 DISCLAIMERS AND TERMS OF USE	109

[Click here to return to report main menu](#) 

## 1.0 INTRODUCTION

### 1.1 Why This Report Now?

The EU ETS has been operational for almost 15 years. In the early years of its application, carbon pricing was high, but the cement sector had more than enough free allowances to cover its operations. Later, the situation became even more comfortable for the sector as a) carbon prices were low and b) the sector was in significant surplus of free allowances. However, in the last years things have become more interesting.


Carbon pricing began to rise in early 2018, reaching EUR27 per tonne at the time of writing this report. At the same time, as cement demand had recovered in certain parts of Europe, several cement plants were confronted with the need to purchase carbon credits at the increased pricing levels (many expect prices to keep increasing). In addition, Phase IV of EU ETS is now being developed, with future allowances (beyond 2020) expected to be based on a lower production activity level for most of the countries and their respective cement plants.

To make things even more complicated, it is now generally accepted that the cement sector has not met the targets set out by the EU ETS (this report proves this conclusively).

An increasing number of large cement companies are raising the climate change issues to the top of their corporate agenda. European cement operations are thus entering a phase of heightened uncertainty. Several issues and questions are unanswered whereas data and analysis on this topic are often unreliable and incomplete.



In this light, CemBR decided to dedicate significant resources and effort to provide a data driven report on the EU ETS as it applies to the cement sector. This report explains the trajectory of the EU ETS to date and provides unique data and insights into every country and every plant covered by the system. This report covers every single integrated cement plant within the EU ETS, thus providing the real picture for 100% of the clinker installations in Europe.


[Click here to return to report main menu](#) 

## 1.2 Why Should You Read This Report?

With the developing uncertainty and the yet undeveloped Phase IV, all parties interested in this topic want to understand how the future might pan out. However, in order to be able to even consider the various scenarios of Phase IV, one must have a solid foundation of the facts and insights as they currently stand. This report will provide this foundation.

There are several questions that are relevant to understanding the future of the system. CemBR believes that most of them are answered by this report. Some relevant questions include:

- How did the 28 countries in the scheme (28 out of 31 have integrated cement plants) performed in Phase I to III?
  - Have they managed to lower their CO<sub>2</sub> per tonne of clinker and by how much?
  - Is the country currently in surplus or deficit of carbon credits, by how much?
  - How did they manage to keep their allowances after the financial crisis?
  - How have different countries behaved in terms of imports/exports?
- Which plants are below, at or above their HAL (Historical Activity Level) for clinker production in 2018?
- Which plants can increase production without exceeding their free allowances?
- What is the financial impact on plants operating under several scenarios of?
  - CO<sub>2</sub> per tonne of clinker;
  - Exports driven capacity utilisation;
  - Overall capacity utilisation;
  - Alternative fuels utilisation;
- How are all the plants positioned for EU ETS Phase IV?

[Click here to return to report main menu](#) 



This report provides data driven answers to these and many more questions.

CemBR's five-member team has been working on this report for several months. All members are cement experts with specific knowledge of the climate change impact on the sector. The CemBR team has also undertaken several conversations with CO<sub>2</sub> experts in the cement sector. CemBR provides details on the methodology used later in the report (Country by Country Analysis Section).

### 1.3 A Short Background


The basis of the EU ETS was first set in 1992 when 180 countries signed the United Nations Framework Convention on Climate Change (UNFCCC). The declared objective of the UNFCCC was to curb the dangerous level of manmade global warming. The UNFCCC was further enforced through the signing of the Kyoto Protocol in 1997. The Protocol introduced two principles that would later become pivotal for the EU ETS system:

- Industrialized countries are assigned absolute quantitative emission targets;
- Emission units can be exchanged between countries under the International Emissions Trading system.

According to the Kyoto Protocol, the then 15 EU Member States were supposed to reduce their 1990 GHG emissions by 8% by the 2008-2012 period. Lacking EU-wide policy instruments to achieve this reduction, the countries continued to decide independently on how to reduce their national emissions. Lack of progress during that time led to the introduction of the EU Emission Trading System (EU ETS) that included specific economic sectors (e.g. energy, industry). The cement industry is one of these specified sectors, widely quoted as being responsible for 5%-8% of global manmade emissions of carbon dioxide.

An important milestone in the climate change action was reached through the signing of the Paris Agreement, which entered into force on November 4, 2016. 186 countries have already adhered to the Paris Agreement out of the 197 Parties of UNFCCC. The Paris Agreement aims to keep the rise of global temperature below 1.5 degrees Celsius versus pre-industrial levels for this century.

More than 40 countries worldwide have introduced schemes to reduce industrially produced CO<sub>2</sub>. By far the widest reaching, most complex scheme that has the objective of encouraging

[Click here to return to report main menu](#) 

investment and promoting concrete actions to reduce CO<sub>2</sub> emissions has been the European Union Emissions Trading Scheme (EU ETS). Major countries opted to introduce such systems with a pilot scheme first (e.g. China), while others cannot implement a nation-wide system given their internal administrative and political procedures (e.g. the United States, Canada) and they opt for regional schemes.

With the current focus on climate change, the most serious environmental challenge the cement industry is facing is the need to demonstrate progress in reducing CO<sub>2</sub> emissions and to keep making rapid and meaningful progress going forward.

This report includes a bottom-up analysis of all integrated cement plants reported by the EU ETS system (210 in total at the end of 2018). The report also considers the impact of all cement plants that were closed since 2005. The main indicators used in the analysis include:

- Free Allocations – the free CO<sub>2</sub> allowance that a cement plant had at its disposal per year;
- Reserve Allocations – in some cases, cement plants requested reserve allocations during the analysed time frame. Reserve allocations were received when a major upgrade was implemented at a certain cement plant. The sum between free allocations and reserve allocations represented the total free CO<sub>2</sub> allowances that were available to a cement plant, country and the entire EU ETS system;
- Verified Emissions – as reported by each cement plant and revealing the actual CO<sub>2</sub> emissions emitted during a certain year;
- Surplus/Deficit of CO<sub>2</sub> – the resulting difference between available free CO<sub>2</sub> allowances and the verified emissions could result in a surplus or deficit of CO<sub>2</sub> at plant level, country level and overall for the EU ETS system.

Another important aspect of the analysis refers to the estimated activity level of the cement sector from the perspective of clinker production (historical and current), which in turn highlights the progress regarding CO<sub>2</sub>/t of clinker between EU ETS Phases and for each country.

[Click here to return to report main menu](#) 