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What might the REAL impact of climate change legislation be on the cement industry?

In the May 2017 issue of *Global Cement Magazine*, I referred to several issues facing the cement industry in combination with the recent geopolitical events. One of these issues was the increased climate change legislation and tighter environmental requirements imposed on the sector. What might the REAL effects of climate change legislation be?

Let us start from the beginning. There is a drive to reduce CO_2 emissions globally as it is believed to be responsible for climate change. It is accepted that the cement sector produces around 5% of global CO_2 emissions. Therefore, the cement sector is high in the minds of authorities when CO_2 reduction or abatement is concerned.

At Cement Business Advisory (CBA), we follow this issue closely. Indeed, at times we are surprised by the pronouncements of various market participants, including cement manufacturers, who advocate a 'win - win' outcome of tighter climate change legislation. What we understand by this is that there are economic as well as environmental benefits to climate change legislation. This may be a true statement when one considers the economic benefits to society as a whole but how does it actually affect the cement sector?

Ways to reduce cement sector emissions

Let us review the CO_2 abatement solutions relevant to the cement sector. Recently, we have seen several ideas regarding new cements that are not dependent on the traditional calcination of limestone process (currently responsible for around 50% of total CO_2 emissions from cement manufacturing) but on other processes that do not produce such elevated levels of CO_2. We have also seen innovative ideas of CO_2 absorbing concrete and other highly technical piloted schemes that replace clinker with something else. We believe that these ideas are interesting, in some cases they are exciting and several require further study.

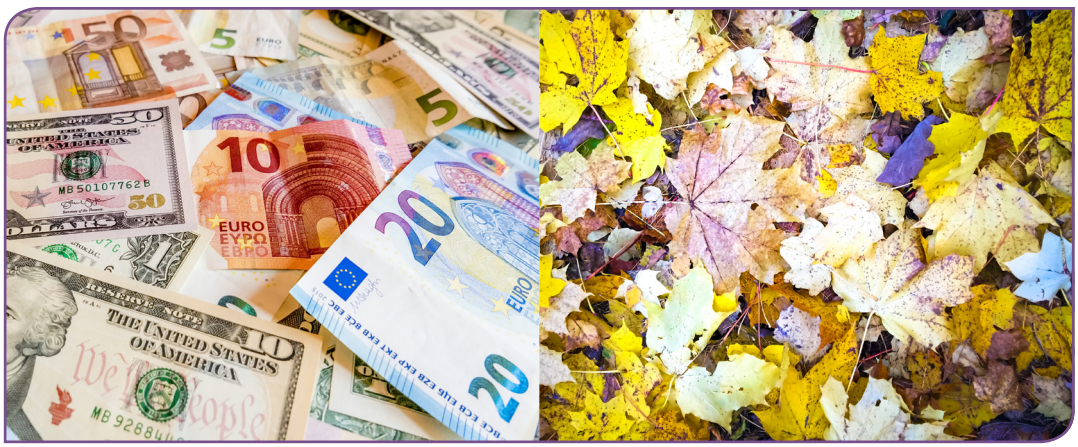
However, being pragmatic, we must accept that these ideas may require significant effort and time to come to commercial fruition. Climate change legislation might not wait for these new technologies to materialise, effectively demanding that the industry adopts currently-available CO_2 abatement solutions. These include:

- Maximising energy efficiency at plant level;
- Introducing the highest possible level of alternative fuels;
- Increasing clinker substitution.

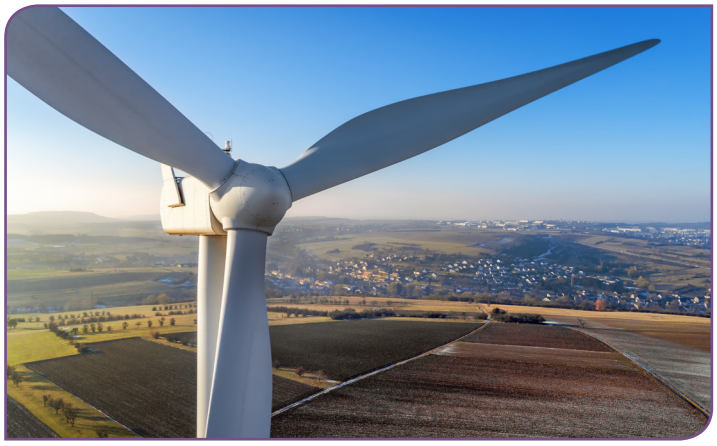
There is, of course, the prospect of CO_2 capture and storage (CCS). Indeed, it would be amazing if CO_2 could be captured and stored safely from any CO_2-producing process. However, for the most part, CCS development is not in the hands of cement producers. Indeed, CCS is an industry in its infancy.

Future economic scenarios

Striving to reduce costs is always a clever idea in any business. So, maximising energy efficiency and increasing usage of alternative fuels is a compelling



Right: Can the imposition of climate change legislation really be a 'win-win' for cement producers economically and environmentally?



"When stricter climate change legislation becomes reality, the biggest losers may be those who have already achieved high environmental standards."

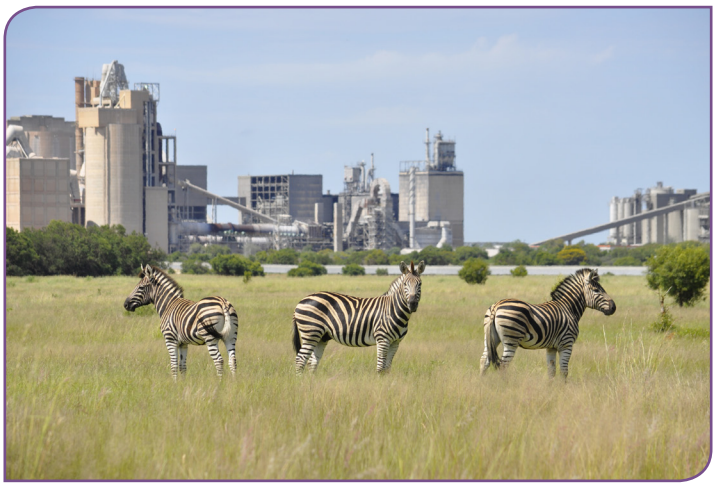
argument for all cement producers. Indeed, there are some producers that have already adopted this strategy. However, this has traditionally been the purview of the most insightful companies. In doing so, they have benefited due to the fact that prices are invariably set by the highest cost producers in a balanced market. The unilateral adoption of environmentally-friendly initiatives has increased margins for the enlightened few as selling prices remained the same.

Above and left: Solar and wind projects have been announced by several cement producers of late. There are installations and projects in Argentina, Australia, Jordan, Kenya, Mexico, Namibia, South Korea, the UK and the US.

However, if tighter environmental legislation results in a multilateral adoption of such initiatives, the higher impact on costs will be experienced by the highest cost producers. In that way, high cost producers will be rehabilitated, and the production cost base will be homogenised across markets. However, as the cost base of competitors moves downwards, will prices follow? In a competitive market, the former high-cost producers, most likely would seek to maintain their cash flow hence prices will not be required to stay at high levels. When prices ease by some, the whole industry is likely to follow. Both practical experience and indeed economic theory suggests that this will be the case. This will have a two-fold impact on the cement industry. Firstly, it will devalue the whole industry by introducing lower pricing. Secondly, the returns achieved by climate change legislation driven projects will not be as attractive as anticipated at the beginning of this process.

The way such cost homogenisation is achieved (either by energy efficiency projects in existing plants or new technologically-advanced greenfield plants) is immaterial as the result will be the same. This impact will happen across all markets irrespective of their specific supply-demand balance. That is, well-balanced markets will suffer as well as markets that experience overcapacity, (which may suffer more).

In other words, if climate change legislation demands the adoption of such initiatives which in turn universally reduce costs, the industry will face lower returns. It will be the companies and not governments that will shoulder these lower returns.



Left: Some cement producers have taken steps to head off climate change regulations and rehabilitate / improve land in the immediate vicinity. Here zebras roam freely in the rehabilitated quarry of the AfriSam Dudsfield plant in South Africa. **Source:** Erina Du Troit, entrant to the *Global Cement Photography Competition*.

Right: Clinker at the Caspi Cement plant in Kazakhstan, part of HeidelbergCement. Reducing the amount of clinker contained in cement blends is already common practice. How much further can the clinker factor be reduced?
Source: Krzysztof Burek, entrant to the *Global Cement Photography Competition.*

So, let's move to clinker substitution. This is indeed a wonderful idea. Produce less clinker, add some other cementitious materials and sell the same amount of cement into the market. The lower cost–lower pricing argument has already been rehearsed. Using cheaper materials, often by-products or 'wastes' of other processes such as fly ash and slag materials across the whole market will lead to lower cement prices in the end. So, no gain there. But what about the utilisation of the existing assets? Imagine a market that moves from zero clinker substitutes to say 30% clinker replacement in a short period of time. Remember, this will affect the whole market as climate change legislation will demand such a move.

"The industry will find itself either with an expensive or under-utilised asset base or a reduced asset base..."

What happens then? Simply, 30% of an industry's capacity will no longer be needed. Whether this is achieved by closures or by reducing capacity utilisation rates the outcome is the same. The industry will find itself either with an expensive and under-utilised asset base or a reduced asset base. Both eventualities result in reducing the value of the industry. We have not even considered issues such as securing reliable and high-quality supply of clinker substitutes. In one stroke the industry has relinquished a large part of its production to players outside the cement sector. I struggle to think of another commodity-based industry that has done this. This initiative therefore, apart from the value reduction, entails significant strategic issues and requires careful planning from the cement industry.

Naturally, we can appreciate that cost differentials between producers / plants are not just a function of energy efficiency or clinker substitution rates. However, this argument is valid to the extent that climate change legislation will create a level playing field by demanding best available technology (BAT) for all cement plants, high and uniform usage of alternative fuels and high and uniform clinker substitution across a market.

Also, CO_2 abatement solutions are not going to be introduced overnight, nor as simply as described above. As always, reality will reveal itself and as in other key issues in cement, there will be winners and losers. Perversely, if (or rather when) stricter climate change legislation becomes reality, the biggest losers may be those who have already achieved high environmental standards. It is they who will face deteriorating margins as prices come under pressure.

Summary

Climate change legislation appears to be inevitable in the cement sector (and others of course). However, its real impact on the sector is either not well understood or badly communicated to the relevant authorities. This is certainly not helped by the triumphalist pronouncements of some of the world's most senior cement institutions and cement producers that promote a distorted (rosier) picture of the impact of tighter climate change legislation on the cement sector.

We cannot fathom their motives, but we imagine that promoting an environmentally-friendly public profile is one of them. However, although enhancing your environmental profile may be desirable, safeguarding your industry (and business) by demanding support from governments on impending environmental costs is essential. It may be prudent for the various cement organisations and international bodies to adopt a more pragmatic approach to climate change legislation and present the actual costs to governments and relevant authorities. Only then can the correct path be forged.

Right: Climate change regulations will affect the cement sector more than it may currently perceive. Companies will have to do more to effectively understand the risks and opportunities.