

Votorantim Cimentos: decarbonisation ambitions

Brazilian cement major Votorantim Cimentos continues its path to decarbonisation and has recently revised its 2030 targets to advance the net zero agenda. Álvaro Lorenz, global director of Sustainability, Institutional Relations, Product Development and Engineering at Votorantim Cimentos, outlines the four main pillars of the company's decarbonisation strategy, the goals achieved and ambitions ahead.

■ by **Álvaro Lorenz**, *Votorantim Cimentos, Brazil*

Votorantim Cimentos has ambitious plans to decarbonise. At its Primavera cement plant in Brazil (pictured), the company uses biomass to replace fossil fuels



The cement industry has been effectively working to reduce CO₂ emissions, especially considering the demands from our growing population in the coming years. According to UN-Habitat's World Cities Report 2022, 68 per cent of the world's population will live in cities by 2050. In a rapidly-urbanising world, concrete is considered the best material to meet the global need for housing and infrastructure.

Concrete has shaped modern society and is vital to humanity. Known for its excellent durability, versatility and resistance, it is considered a sustainable material in terms of life-cycle analysis and

has characteristics that make it resistant to fire, weather and flooding. It also provides excellent thermal insulation in buildings (which reduces energy consumption) and rigidity in road surfaces (which increases vehicle efficiency).

Concrete is the second-most consumed resource in the world, after water. Concrete also has unique qualities that enable other sectors, such as the renewable energy market, to develop at the speed necessary for us to achieve, as a society, the target for emissions reduction set by the Paris Agreement at COP21 (2015).

Tackling the negative effects of climate change is at the core of our strategy at

Votorantim Cimentos. We recognise our role and the importance of our decarbonisation journey, which remains in line with our 2030 Sustainability Commitments.

We believe that the climate change agenda also translates into increased competitiveness. The most competitive companies will be those with the lowest greenhouse gas emissions. Votorantim Cimentos has been leading several decarbonisation efforts in all the countries in which we operate.

While the cement industry is responsible for seven per cent of global CO₂ emissions, according to the International

Energy Agency (IEA), in Brazil, this share is almost one-third of the world average, or 2.6 per cent, according to the National Greenhouse Gases Inventory. This is thanks to a number of initiatives, including investments in a more renewable energy matrix.

Votorantim Cimentos' ambition is to produce carbon-neutral concrete by 2050. Over the 1990-2022 period, the company reduced its CO₂ emissions per tonne of cement produced by 24 per cent.

Revised targets

In December 2022 we announced our revised 2030 decarbonisation target of 475kg of CO₂/t of cementitious product. Votorantim Cimentos' new global target is 8.7 per cent lower than the target previously announced as part of our commitments (520kg of CO₂/t of cementitious product).

The new target was approved by the Science Based Target initiative (SBTi) and represents a 24.8 per cent reduction compared to the base year 2018. The validation reinforces our commitment and continuous efforts to advance the net zero agenda.

We have been tirelessly working to help decarbonise the entire value chain and leave a positive legacy for society as a whole, seeking partnerships, supporting the circular economy and developing new technologies. The SDG 17 (Partnerships for the goals) is one of the most important UN Sustainable Development Goals, since it supports the strengthening of means of implementation and global partnership for sustainable development.



Top: co-processing of waste-derived fuel at Votorantim Cimentos Rio Branco do Sul plant in Brazil. Right: co-processing of açai seeds at the Primavera cement plant, Brazil

Concrete is durable, versatile and considered a sustainable material in terms of life-cycle analysis. As a result, it is considered the best material to meet the global need for housing and infrastructure



Four main pillars

Votorantim Cimentos' decarbonisation strategy is based on four main pillars:

1. co-processing
2. use of cementitious materials to reduce the clinker factor
3. energy efficiency and use of renewable energy sources
4. the development of technologies/ carbon capture, usage and storage (CCUS).

Both co-processing and clinker substitution are examples of circular economy concepts that we implement, while promoting a cycle of renewal and reuse, and leveraging the value chain and

partnerships among various sectors of the economy.

Co-processing

As part of our 2030 commitments, our goal is to replace a percentage of the fossil fuels we use with alternative energy sources, achieving a 53 per cent thermal substitution rate. Through co-processing, we replace fossil fuel in cement kilns, using primarily biomass and waste, with a positive impact on our CO₂ emissions. Examples of the waste we co-process include used tyres, industrial and urban



waste (such as non-recyclable materials that end up in landfills), and biomass (eg, açai seeds, which are already used on a large scale in our Primavera plant in the state of Pará, and olive pits, already in use at our sites in Spain and Tunisia).

Votorantim Cimentos has been a pioneer in the use of alternative fuels (AFs) in Brazil since 1991, when the company started co-processing used tyres. Since then, the company has been researching new materials that can be used as fuel to replace petcoke.

In 2022 Votorantim Cimentos replaced 26.5 per cent of the fossil fuel it used globally with AF sources, including in 29 operations in Argentina, Brazil, Canada, Morocco, Spain, Tunisia, Turkey, the USA and Uruguay. In Brazil alone, 1.3Mt of waste and biomass were used as AFs in our cement kilns, an increase of almost 20 per cent compared to 1.1Mt in 2021. Some of our plants are already able to use up to 60 per cent of AFs.

Clinker substitution

Moreover, we promote the circular economy and the preservation of natural resources by using by-products from other industries and alternative raw materials, such as blastfurnace slag, fly ash, calcined clay and limestone filler, to replace clinker.

Our goal is to achieve a 68 per cent clinker factor by 2030, which means that 32 per cent of our final product will be made up of alternative raw materials with lower CO₂ emissions. In 2022, we achieved a clinker factor of 73.9 per cent.

Our constant search for new cementitious materials is supported by an area dedicated to mapping new opportunities, such as the use of calcined clays on a globally expanded scale. In addition, we have established a global working group to exchange best practices and test new solutions.

Energy efficiency and renewable sources

The search for more sustainable energy sources that can reduce consumption and emissions while also preserving natural resources is a continuous effort in the industry. We are working to achieve maximum efficiency in our processes while also adopting a more renewable energy matrix. Our commitment is to have 45 per cent of the energy we consume globally coming from renewable sources by 2030. In 2022, this share was 22.9 per cent, up from 18.5 per cent in 2021.

We have our own hydropower plants, and are making major investments in solar and wind energy to increase our renewable energy generation capacity. A successful example is our Ventos do Piauí wind farm, in the northeast region of Brazil, which started operating in January 2023, generating clean electricity, and further strengthening our strategic position in renewable energy generation and consumption. This initiative added 55MW to our installed generation capacity, increasing the share of renewable energy in our energy matrix in Brazil to 49 per cent.

In 2022 we invested in the completion of a photovoltaic generation facility in our Toral de los Vados plant in Spain. With an installed capacity of 6.2MW, the facility is expected to supply 30 per cent of the electricity used by the plant starting in 2023. We also started construction of another solar plant in Alconera, also in Spain. In addition, 83 and 100 per cent of the electricity used by our Asment Temara (Morocco) and Tenerife (Spain) sites, respectively, come from wind sources, which are completely renewable.

Development of new technologies

Finally, technology development is the fourth pillar of our decarbonisation strategy. This includes the use of innovative processes and new materials, CCUS, dematerialisation of the value chain and partnerships with various entities and academia to increasingly optimise resources and reduce carbon intensity.

CCUS is an important lever in our decarbonisation journey. According

to the Global Cement and Concrete Association (GCCA), CCUS is expected to become significant in the future, after its commercial viability has been determined and the necessary infrastructure has been established. Within the scope of the GCCA, we participate in the Innovandi Open Challenge programme, which aims to accelerate the development of new technologies that can lead the industry toward the goal of zero emissions.

These are the four main lines of work, which include a series of initiatives to align our emission reduction targets with the ambition required by the Paris Agreement. Our risk assessment by agencies specialised in environmental, social and governance (ESG) aspects continues to improve. One example is Sustainalytics, which included Votorantim Cimentos, the only company in the building materials sector in Latin America, in its Top-Rated Industry ranking based on an analysis of the company's 2022 ESG ratings.

Conclusion

Our business strategy aims to increase our competitiveness and operational efficiency, while leveraging decarbonisation initiatives in all regions where we operate. Our biggest commitment – what moves us forward every day – is to make our company more sustainable, both in the long and short term. We know that the journey will always be long and challenging, but we are ready to transform our business and adapt to new needs, while honouring our past, living in the present and focussing on the future we want to build. ■

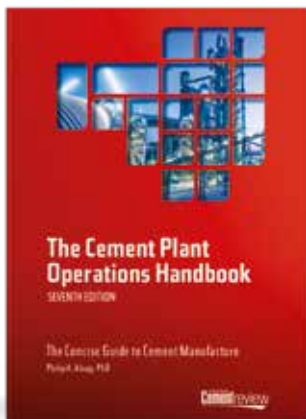


While the journey will always be long and challenging, Votorantim Cimentos says it is ready to transform its business and adapt to new needs

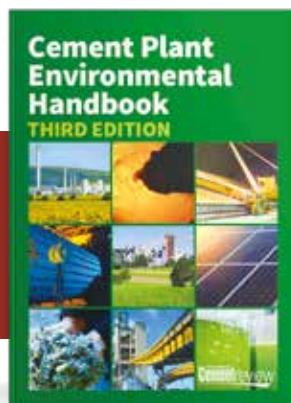
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