

2021/22 EDITION

# CAPTAINS

CEMENT & CONCRETE

LEADER  
SERIES

2021/22

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## LEADERS

**CAPTAINS OF CEMENT  
& CONCRETE LEADER  
SERIES 2021: STEERING  
SUSTAINABILITY AND  
SUCCESS IN THE BUILT  
ENVIRONMENT GLOBALLY**

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# CAPTAINS

## CEMENT & CONCRETE

## LEADER SERIES

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### Credits

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#### Vice President:

Devi Paulsen-Abbott  
email: DeviPaulsen@dmgevents.com

#### Project Director and Editor

Tracey-Lee Zurcher

#### Managing Editor:

Eamonn Ryan  
email: EamonnRyan@dmgevents.com  
T: +27 21 700 5500 M: +27 82 560 8718

#### Exhibition & Publishing Sales Manager:

Kenneth Masvikieni  
email: KennethMasvikieni@dmgevents.com  
T: +27 21 7005509 M: +27 72 686 6998

#### Advertising:

Centaine O'Reilly  
email: centaineoreilly@dmgevents.com  
Cell: 072 911 1904

#### Marketing:

Cape Town office: Zara Eckles  
email: zaraeckles@dmgevents.com  
T: +27 21 700 5511 M: +27 72 590 3207

Johannesburg office: Saki Magoxo  
email: sakimagoxo@dmgevents.com  
T: +27 11 783 7250 M: +27 83 735 7213

#### Design & Layout:

Virgil Jacobs  
email: rykim@mweb.co.za  
M: +27 83 524 5024

### dmg events

Published by dmgevents: Units 5 & 6, EDGE HOUSE, 16 Bell Crescent Westlake Business Park, Westlake, 7945, Cape Town, South Africa  
Tel +27 (0)21 700 5500 | Fax +27 (0)21 700 5519  
76 11th Street, Parkmore, South Africa, 2196 | PO Box 650302, Benmore 2010 | Tel +27 (0)11 783 7250 | Fax: +27 (0)11 783 7269



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## EDITOR'S COMMENT

*Concrete Trends* magazine is proud to present its latest *Captains of Cement and Concrete* publication, outlining the viewpoints of many thought leaders in the cement production industry. They discuss the major influences affecting the global industry, in addition to a focus on three critical emerging regions: Southern and East Africa; West and North Africa; and the Middle East and Asia.

According to *Fortune Business Insights*, the global cement market size was USD 313.60 billion in 2020. It is projected to grow from USD 326.80 billion in 2021 to USD 458.64 billion by 2028 at a compound annual growth rate (CAGR) of 5.1% during the forecast period. The rise in CAGR is attributable to growing demand as markets return to pre-pandemic levels once the pandemic is over.

Recovery apart, the cement market size is set to gain momentum from two factors: rapidly growing populations, and the surging usage of green cement to develop sustainable and eco-friendly buildings. Government bodies in various countries have implemented strict norms to reduce emissions by modifying the manufacturing process, and these are in the process of being introduced in the countries our readership covers.

The global impact of Covid-19 has been unprecedented and staggering, with the product witnessing a negative demand shock across all regions amid the pandemic. *Fortune Business Insights* estimates the global market exhibited a decline of 3.6% in 2020 compared to the average year-on-year growth during 2017-2019. In Africa and the Middle East, this decline was initially as much as 15-20%.

Rising populations have increased the need for residential building, alongside growing demand for cement for public infrastructure and non-residential buildings such as hospitals.

With 2022 beckoning, many companies will be attempting to forecast budgets for the coming year. Company CEOs and financial directors have an unenviable task. In many parts of the world there have already been two years in which economic forecasts have borne little relationship to what has occurred in fact. A year ago, nobody would have believed the experience of the past year, which has seldom been witnessed outside war zones. After everything else, the year ends with a global supply chain crisis and tremendous overcapacity in the cement industry. So good luck with forecasting the year to come.

Will there be a fourth Covid-19 wave? More lockdowns, with business closures and job losses? Or will the nascent recovery gather steam and the good ship Earth at last right herself?



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One thing that is clear, and reinforced by the Cop26 climate change conference in Glasgow during November 2021, is that all companies have to become adaptable, flexible and keep a close watch on global events if they are to survive. If there is one thing that we can be sure of, the coming year will be uncertain and unpredictable – and it is the fleetest of foot who will survive.

The *Captains of Cement and Concrete* featured in these pages generally provide a blueprint of success and offer insights into how to run a business during difficult times. These are times to get through, because in many of the parts of the world featured herein the cement market possesses vast potential and opportunities driven by growing populations and rising affluence. ■



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## Some had it tough, some got lucky

I am the CEO of the World Cement Association. We have members around the world with whom we keep in touch about what's going on in their own regions regarding Covid-19. While there is quite a bit of difference across different countries' responses to the pandemic, there are also many similarities.

For instance, some countries were particularly hard hit while others escaped with little impact. As a general rule, there has been about an average 15-20% reduction in 2020 demand compared to the expectations that companies had prior to Covid-19. We've seen some cases in the Gulf, in UAE for instance, where the market downturn has been much worse than that. With migrant labour so extensively used, resuming construction proved more difficult than elsewhere. In China we may see no market impact from Covid-19 on this year's demand, or quite possibly a positive impact. Therefore the range is quite broad.

As we emerge from lockdowns and the various restrictions, we may see one of two scenarios:

- We may well see deep discounts in pricing as companies desperate for cash flow try to secure business; or
- We may see a bit more discipline where companies realise that it will return to normal after a while and by holding on to current pricing, they can protect their margins to some extent.

My guess is that countries will vary between the two responses. We're already seeing discounts in export markets so I think that for importing countries there is going to be some price pressure. On the other hand, there is also a suspicion that lead times on supply chains may become extended as we have seen in other industries such as medical supplies and food. I think it applies to basic products like cement as well.

Therefore, countries that import cement might question whether that is the right thing to continue doing, or whether they should rather be encouraging local production. That remains to be seen, but there are certainly some countries where it is already a topic of discussion, including in South Africa. Where supply chain interruption is most severe is where there is probably going to be a higher lobbying to secure local supply.

One of the key challenges the industry faces which Covid-19 hasn't changed, is the oversupply in most markets around the world - with some considerable variances. In India and sub-Saharan Africa there is substantial potential for growth over the next ten years, whereas other markets face the potential of a flat or even declining demand.

## There are more challenges

Overcapacity is often accompanied by a poor market structure. This is characterised by a lot of new entrants and opportunistic entrants during peak demand, leading to significant overcapacity. In high-potential sub-Saharan Africa, many countries have a fragmented supply in which profitability is under pressure. In this scenario, even though you would expect that growing demand is a good thing, sometimes that turns out not to be so due to the number of new entrants. Making the industry more profitable longer term is a challenge.

Climate change is something we have known about for 20-odd years, when it first appeared in the guise of CSI (Corporate Social Investment). The awareness and pressure to reduce CO<sub>2</sub> emissions is clearly growing. We see more companies and organisations making a commitment to become net-zero carbon emitters, and we have most recently seen the commitment from China that the whole economy will be net-zero carbon by 2060. This is really a significant step as China is the largest emitter and its cement industry represents over half of global supply. However, outside Europe, there have yet been few such commitments - with a question mark over the US.

We know how to reduce emissions by a third, but not the other two thirds. That requires new technologies to complete that decarbonisation process. If China has set the target of zero emissions, then the cement industry in China will be more focused on this issue, which can then be implemented around the world. With new technologies, we can get it done fairly quickly.

Technologies we have at the moment include energy efficiency and AFR (alternative fuels and raw materials) in reducing clinker factor. As these typically reduce costs, it's in everybody's interest to adopt these as quickly as possible. If new technologies were to actually increase costs, then that would raise questions.



## And opportunities...

Geographical opportunities exist, particularly in growing markets in India and sub-Saharan Africa, and especially regarding new products. A good example of this is the Cimpor investment in Ivory Coast. There is a shortage of limestone in the whole of West Africa and typically clinker has been imported from Europe, Turkey or North Africa. What Cimpor has done is build a metakaolin plant, as they mine kaolin locally, and produce an LC3 product, which is only 50% clinker, and this can compete with an Ordinary Portland Cement (OPC). That's localising production that previously was imported, thereby reducing costs and saving foreign currency.

Research is being done to make other cementitious products or materials more effective so that they can be used in greater quantities. There are various technologies that people are looking at to upgrade fly ash so that that can be used in greater quantities. There are specific product opportunities likely to develop in particular geographies.

Whether you call it the Fourth Industrial Revolution, digitalisation or Artificial Intelligence (AI), it's getting to the stage where this is really a big topic among cement companies around the world. Our focus is primarily on the plant when we talk about digitalisation and AI, and we could look more widely than that - we see AI having an impact in management and human resources and so on.

Regarding plant, there's a suite of things that can be done online or by remote condition monitoring and remote servicing, including commissioning services. This has become something of a necessity during Covid-19 and worked quite well. Those who have either provided or used remote commissioning services or remote support services report being happy with them. This is likely to continue after Covid-19. Using the same technology, daily and monthly maintenance inspections can be performed. Other technologies that are used on inspections, including CCTV and drones and so forth.

AI and machine learning can be applied to cement plant control. There are companies that have implemented complete systems and experienced significant improvement in the variability of the process which has allowed them to achieve savings in materials and improve productivity of 2-4% on materials and 5% on productivity. These savings are worthwhile for what is not a huge amount of investment.

Another interesting evolution is that of the future control room, and whether it will enable the controlling of multiple plants from a single control centre. The technology already exists, but the main concern is its vulnerability to cyber-attacks. It potentially gives multi-plant companies an advantage in controlling several plants from a single control centre, having the benefit of machine learning over several plants as well as being able to have higher level experts looking after a number of plants at once.

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There's clearly geographical opportunities in terms of the markets that are going to grow, in India and sub-Saharan Africa in particular.

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I think cyber-attacks are something that impact all of the IOT (Internet of Things) transformations no matter the industry. If you can't be confident in keeping a plant free from cyber-attacks then you would be reluctant to have a system which allows remote control of the plant. A lot of the systems at the moment have remote monitoring of plants but not remote control. If you don't have the remote control, then your vulnerability to cyber-attacks is much less.

### Regional issues predominate

East Africa as a market is connected to the Middle East. Clinker and cement are imported from the Middle East into East African countries. One of the questions is whether that will change and whether we will see more local production. It's a policy issue for these countries based on economics. The degree of oversupply in the Middle East, the Gulf and Pakistan mean cement will be available at low prices. If import countries don't have policies that promote local production and encourage companies to build clinker plant, imports will be the most economical way to satisfy demand.

In West Africa, the concept of the LC3 development by Cimpor in Ivory Coast is something that is being looked at by other countries as well. Where you have a region short of limestone, this seems like a good opportunity. Unless somebody discovers some new limestone, it's likely that clinker is going to continue to be imported there, and with the low international price of clinker likely to continue, that's probably going to make sense. If you can localise production by producing a portion of cementitious materials locally, that would seem to be an opportunity for those markets, so those are probably the two areas where we may see some change. ■

## SWOT analysis: Southern and East Africa



**Strength:** The government of Kenya has initiated an affordable housing programme with a target of 500,000 units by 2022. The programme is being implemented as a public-private partnership. In South Africa, the government has announced an infrastructure roll-out programme to stimulate the economy.



**Weakness:** Cement manufacturers in the region are going through turbulent times, with profits falling and some going into loss territory as a result of stiff competition from cheap imports (due to over-capacity elsewhere in the world), high power costs and low demand in the housing and construction sectors.



**Opportunity:** The cement market possesses vast potential in East African countries on account of soaring population and rising income levels in the region. This is also stimulating infrastructural activities in both the residential and commercial sectors. The Southern African cement market, while mature, similarly stands to benefit from the urgent need for infrastructure.



**Threat:** The cement industry in East Africa is highly fragmented. To resist cheap imports, it may have to consider consolidation to some extent. South Africa in particular needs to legislate against foreign dumping of cement.



## ERIC DIACK

AFRISAM EXECUTIVE CHAIRMAN  
SOUTH AFRICA

### INTERVIEW

#### On sustaining and growing in unusual times

**What has the Covid-19 impact been on the cement production industry? What are the short- and long-term challenges, and how do you believe they will be overcome?**

Like many other industries, Covid-19 has had a major impact on the cement production industry. During lockdown level 5 in South Africa, all of our production facilities were closed and put into care and maintenance for several weeks, which meant that no cement was produced during this period. In addition, industry segments that provide us with raw material, such as the steel and power generation industries, faced similar challenges and as a result, materials such as slag and fly ash are also currently in short supply.

As the economy started to reopen, we saw buoyant demand for bagged cement products which resulted in a shortage in supply. Afrisam implemented a number of mitigating measures to address the immediate demand for cement, which included increasing our clinker production capacity.

The muted economic growth of the country, worsened by Covid-19, remains one of the most critical long-term challenges for the cement industry. Cement demand is closely linked to the economic growth rate and, with significant surplus production capacity in the country, the continued muted demand for cement places severe pressure on profitability for cement producers. As cement producers, we have restructured our operations to ensure that we are able to produce as efficiently as possible, but in order to overcome this challenge, we will require government intervention that will stimulate infrastructure spend and future improved economic growth.



## Current Top Challenges

### **Besides Covid-19, what are the 2-3 macro-economic challenges that the cement and concrete production industry is facing globally?**

The global recession has resulted in surplus cement production capacity across the world. As such, many countries are seeking new markets to which they can export their cement. This has led to a significant increase in cement imports, and this is evident here in South Africa. This adds to the challenges faced by the cement industry in South Africa which I have already highlighted. Many of these exporters receive subsidies from their local governments, while producers in South Africa are faced with a higher cost of doing business due to the various environmental, labour and other laws and regulations that govern our local industry. In 2019, over 1 million tonnes of cement were imported by South Africa and in 2020, despite our borders being closed for half of the year, almost 500 000 tonnes of cement landed at our ports. The cement industry, through Cement & Concrete SA has also applied to ITAC for the introduction of import duties to level the playing field for local cement producers compared to imported cement.

Climate change and the strain on the planet's resources is another challenge faced by the cement and concrete industry worldwide. Globally, cement producers are looking at ways of minimising their impact on the environment. We have also seen Carbon Tax introduced in many countries, including South Africa.

## Current Opportunities

### **Conversely, what are the current opportunities in the sector? Where are the growth and investment areas?**

Urbanisation remains a global trend and it is estimated that by the year 2050, 2/3 of the world's population will live in urban areas. Urbanisation presents many opportunities for the construction industry as well as the cement and concrete sector. In South Africa, approximately 68%\* of our citizens live in urban areas. Of these citizens, about 23%\*\* live in informal settlements. We also have a growing population. This means that in South Africa there is a long-term demand for housing and other social development requirements such as schools, hospitals, roads and other infrastructure. In developing countries, there will inevitably be a demand for construction materials, which bodes well for our industry in the long term.

(\* Statista 2020)

(\*\* South Africa Infographics © GIZ)

Africa has a great need for infrastructure development. This provides a positive outlook for the cement, concrete and construction industry. The South African government has made infrastructure development a key focus to stimulate the economy and increase employment. Should this commitment materialise as the government intends, we will see an increased demand for cement and concrete products.

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**In the long term, with positive economic growth and demand for infrastructure in the SADC countries, cement producers can look forward to a positive future.**

## On 4IR: The Next Revolution

### **How is the industry responding to the Fourth Industrial Revolution, in your view?**

Generally, businesses are looking at ways to make their operations more efficient and effective. This is mainly achieved through technology. As a cement and concrete industry, and even in the construction industry, we have embraced new technologies and most certainly appreciate the value these can add to our businesses. This ranges from new equipment and automated processes in the manufacturing process to applications such as 3D concrete printers. Be that as it may, the costs of these new technologies provide some barrier to acquisition and implementation for now. I'm sure as time goes by, these will become more affordable and accessible.

However, as an industry – both in manufacturing as well as construction – we play a critical role in providing employment opportunities in the country. The construction industry provides for 72% of the total formal employment in South Africa, while manufacturing (across all sectors) accounts for 10%\* of total formal employment. In developed countries, one job in the cement industry creates ten times more upstream and downstream jobs. This figure may be four to five times higher in developing countries. Therefore, it is critical that we carefully balance the need for ICT and technology adoption with providing livelihoods for our citizens.

(\*Quarterly Labour Force Survey Q1:2021, Stats SA)

## On Regional Factors

### **What is the status quo of the cement and concrete production industry in South Africa, and more broadly, SADC?**

About a decade ago, the African continent provided great potential and returns for cement producers. At the time, cement producers enjoyed strong demand for their products and good growth prospects. However, as more producers sought to gain access to this attractive market, competition on the continent, specifically the SADC countries, increased significantly.

In addition, as we have seen in South Africa, there has been a slowing of economic growth and a decrease in the demand for cement and concrete products over the years. There has also been political instability disrupting the market in some of the SADC countries.

On the positive side, when compared to the rest of the world, cement utilisation per capita and cement consumption in Sub-Saharan Africa is much lower when compared to the rest of the world. This means that the continent still offers potential to cement producers. In the long term, with positive economic growth and demand for infrastructure in the SADC countries, cement producers can look forward to a positive future.

### **What do you enjoy doing in your spare time, when you are not thinking about the cement production industry?**

I enjoy playing golf, mountain biking and reading.



## ROLAND VAN WIJNEN

PPC AFRICA CEO  
SOUTH AFRICA

INTERVIEW

### Each African country has its own unique challenges

I think the first time we started seriously looking at Covid-19 was last year in early March, when we formulated some key objectives to manage it. The first objective was to keep our people as safe as possible and to reduce the risk of spread. The second one was to keep the economies going in the countries where we were active. That meant reaching out to our suppliers and to customers, so that we were able to mitigate the cash crisis.

At the moment, the challenges facing the industry can be split into two different categories: the micro-level and the country-level. Each has different challenges in the different countries in which we operate. Our largest market, South Africa, has an overcapacity yet with imports entering the country. It also has a high unemployment rate, which are all elements that are important for us to consider.



It is important for any country to be self-sustaining in its cement production. This is a necessity for building the infrastructure that is needed, such as schools, hospitals and roads. Therefore, what we are aiming to make clear to the governments not only of South Africa but those of other countries where we operate, is that local manufacturing is crucial. This is not only for job creation, but also to make sure that they are self-sustaining. To this end, we pride ourselves on being a 100% locally manufactured cement producer in each country where we operate.

Another major challenge lies in the cement industry's role in environmental sustainability and climate change. PPC has been active for approximately 129 years and has always considered sustainability a high priority. Our company operates in remote, rural areas and as such we recognise the environmental impact which we have had over the many years.

Things are changing. The cement industry has a big advantage in that it does not produce solid waste. All input materials are converted into output materials. Having said that, we do generate non-solid waste in the form of greenhouse gases (GHG) that are released during the production process. Operators in Africa, PPC included, still have a long way to go to introduce technologies that reduce GHG emissions. The use of alternative fuels to convert waste into fuel streams is not well developed in our countries. These are already commonplace in other countries, and our membership of the World Cement Association gives us access to these technologies.

At the moment, we are looking to bring to Africa an innovative means of introducing carbon dioxide into concrete. This technology is widely applied in Canada, the US and elsewhere. This is but one example of where PPC recognises its responsibility and is willing to contribute to the solutions in society.

## Developing Africa

If you look at developing countries on the African continent, the opportunities are plentiful. Just in South Africa, one in four people lives in an informal settlement. Covid-19 has further highlighted the need for proper housing solutions, where the cement and concrete industry plays a big role. I see plenty of opportunity in the sector.

The big question companies like PPC need to answer is how they can introduce some of the more innovative global ideas so as to speed up development. The telecommunications industry is an excellent analogy: Africa skipped the implementation of landlines and went directly to mobile technology. We could do something similar in cement and concrete so that we do not have to go through the same drawn-out evolution as for instance Europe went through. This is the exciting challenge that lies ahead.

The industry takes seriously the employment opportunities it can provide, whether through manufacturing or in the construction sector. New technologies and opportunities for upskilling will have a major impact. We are careful in ensuring that, on the one hand, we remain competitive, but on the other hand, we are socially

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If you talk sustainability, you need to balance the people, planet and profitability of an organisation.



responsible in the communities where we operate. As a leader in our industry, we have had to come up with solutions that enable the implementation of new, more productive technologies as they become available. This has to be accomplished all the while upskilling the workforce in and around our plants to make sure we are providing opportunities for people to do meaningful work. For instance, opportunities in the digital space are tremendous.

In Africa, there are some cases where we would like to see the regulatory framework evolve. If we look at the opportunities to use waste streams as alternative fuel, for example, this would obviously require a certain capital outlay. Unless there is regulation that prohibits the dumping of those waste streams, it is not an attractive business model. A sustainable solution requires balancing the interests of people, planet and profitability of the organisation. Consequently, we are pushing governments to put in place regulations which establish the right balance.

As our products sometimes travel great distances, the lack of infrastructure is another challenge in some African countries. As an example, in a country such as DR Congo, to transport product from our production facility in the western part of the country to the eastern part is a journey of thousands of kilometres, involving a truck, a waterway and finally a motorcycle to bring a bag of cement to a rural area. This shows the scale of development – and opportunity – for cement and concrete to contribute to their infrastructure.

## Getting to know me

Africa is a great place to spend one's spare time. I like to be out in nature, so in that sense, being in South Africa is certainly a blessing. I also like to enjoy a good meal, a glass of wine and a really good book. I used to be a hobby pilot, which unfortunately Covid-19 has prohibited me from doing for the last 12 months, so my licence is expired by now. I also enjoy scuba diving and various things that keep me active, both physically as well as mentally. ■





**ALBERT SIGEI**

CIMERWA PPC CEO  
RWANDA

**INTERVIEW**

## **Building a business that is not only profitable but sustainable – A peek into CIMERWA Plc**

Growth opportunities abound for the cement sector in Africa, and particularly in Rwanda. Africa's cement sector lies in a unique place at the moment. It is an industry still very much in its formative stage and growing rapidly, making for exciting times.

To gauge potential, one indicator commonly assessed is the per capita consumption of cement. Among African countries, this statistic is on average below 100 kg per capita, with a mid-to-high range of 100 kg to 200 kg. Rwanda, for instance, is even lower at 60 kg per capita. That describes the potential in our market, given that the conventional wisdom is that countries in a fast-growing bracket (like Africa) should have a per capita consumption of anything from 200 kg through to 600 kg. Sometimes it can even reach 1,000 kg. Countries in the maintenance phase tend to have a lower per capita consumption of about 250kg. Consequently, there's a lot of work to be done in terms of developing the cement sector of Africa.

Along with that opportunity comes risks - there are quite a few of them. At the top of the list has to be the continent's poor infrastructure, if we are to facilitate trade and movement of goods. Services within Africa tend to be a bit more challenging compared to other parts of the world. As an example, to move one tonne of cement over a distance of about 500 kms adds about US\$30 to its cost. That cost is much lower in Europe and other developed regions.

### **Logistics in the African Great Lakes region**

More generally, the cost of doing business in Africa in terms of logistics, and other facilitating elements like energy, is higher than elsewhere with there being both tariffs and non-tariff barriers on the borders. Nonetheless, there is a shift in momentum - and there is hope. At different levels, bilateral arrangements are being established, for example, between Rwanda and its neighbours at a regional bloc level and the various trade communities, such as Comesa and SADC. Finally, there is the African Continental Free Trade Area (AfCFTA) that is being worked on and which will bring everything together. These trade communities are starting to attract significant fixed direct investment (FDI) into Africa.

AfCFTA is a fairly new organisation where the greatest push is - and it is good news. The vast majority of countries have now signed up which means it has the critical mass to move forward as an extremely critical foundation. While it's early days yet, we are starting to see actions on the ground with various structures being set up to sensitise people and businesses, and we're seeing governments making commitments to do all that's needed

to connect Africa. The hope is that African countries trade between themselves more than they trade outside the continent – as is the case everywhere else in the world. I'm tremendously optimistic about this because we are seeing the foundations being laid for what is one of the more difficult paths.

The cost of logistics is a major input affecting cement players, particularly clinker and gypsum, especially in the Great Lakes region of Central Africa. Fortunately, CIMERWA is an integrated player with access to the full value chain. This makes us less susceptible to the vagaries of international trade, and Rwanda doesn't import cement or clinker. That's not to say we're completely off the hook in this environment of current freight volatility, because we are developing markets in the Great Lakes region, which is in the heart of Africa. Here we have a competitive advantage through being a fully-fledged integrated player.

Rwanda has a good business environment - in 2020 it was ranked number 38 out of 190 countries by the World Bank in terms of ease of doing business. Our GDP growth is forecast around 8% this year, and there is a rough correlation between GDP growth and cement consumption growth. This points to good prospects for the construction industry and cement sector. Rwanda is an ambitious country; you just need to look at the government's Vision 2050, which is targeting a high standard of living for all. Urbanisation is estimated to grow to close to 35% by 2024, from under 20%, and to accommodate that rapid shift of population there is a large variety of projects planned to accommodate it, including satellite cities, a new airport, and more.

### **The triple bottom line and local initiatives**

Regarding sustainability, we look at our business from the viewpoint of whether we can build a profitable business that is simultaneously considerate of the climate and makes a positive impact on society. The primary purpose of CIMERWA is to 'strengthen Rwanda' as our brand promise, that's what we are doing on the ground. We're in the process of building a sustainable business, and that is profitable at the same time. In this regard, there are a couple of specific initiatives we have around sustainability and our ESG priorities, not forgetting that we remain a profitable business at the level of the triple bottom line.

Corporate social investment is one of those initiatives, where we look at all our stakeholders and make sure we include communities, government, and partners in our activities. One aspect of this is a focus on education. We sponsor a school of more than 500 students. On health, we have a clinic that is not only for employees but also aids the local community. We also support economic empowerment, having built and facilitated a trading market as well as a local cooperative that is focused on tailoring. On an annual basis, we spend upwards of US\$300,000.

We remain highly focused on the growth of our product range, of course, because Rwanda and Africa generally, is fast growing. We have a number of initiatives and projects to improve our productivity by maximising utilisation of our existing assets, and also expansion projects.

We are steadily raising our usage of alternative fuels like biomass and rice husks which now amount to more than 10% of our energy, and heading higher. To further decarbonise, last year we launched a new range of products, our Sure range, with a much lower CO<sub>2</sub> footprint.

We have fixed targets to reduce the amount of CO<sub>2</sub> per tonne in our products. We are reducing the proportion of high-carbon clinker in our cement and introducing more innovation into our product portfolio without compromising the quality. Research and development on our operational processes also consistently reduces CO<sub>2</sub> emissions each year.

### **Getting to know me...**

I am a Kenyan, which is where I began my career working for a professional services firm PricewaterhouseCoopers for about six years. Since then, I have been in the cement industry for close to 20 years, during which time I have worked around the world in places like London UK, Egypt, Nigeria, and Malawi, among others, with my three children. It is a privilege to work in the cement industry in Africa at this time as I'm quite passionate about Africa. ■

# Building partnerships one floor at a time

**Sven Schutte** is the South African representative of All States Africa Concrete Equipment, a concrete equipment business established more than 30 years ago, and has now taken it from an agency to the fully operational company which is All States Africa Concrete Equipment. As a specialist contractor in concrete finishes in South Africa, Sven's work with All States Concrete Equipment gave him an edge in the quality for cost he could provide the local market.

"All markets have their own peculiarities, and South Africa perhaps has more than some. In the concrete flooring and finishes segment, there is definitely space in the market for specialist contractors, able to bring the granular knowledge and equipment to projects often reserved for larger players and sub-contractors."

### Partnerships for growth

Representing an incredibly extensive product range, including Ligchine's range of boom and drive-in screeds and Betonelli's innovative power float technologies, All States Africa Concrete Equipment brings together an offering of global standards, fit for local market conditions. "To really benefit from these products in the South African market, it is essential to be a true partner to our customers," explains Sven. "The first step is the most important: making contact. From there, we work very steadily with our customers, understanding their businesses and goals and developing a solution that is affordable and will give them not only the technical results, but the best shot for projects that may once have seemed out of reach."

### from speciality contractors...

From retail spaces, commercial office spaces to large industrial spaces, there are many technical routes to the desired finished product. With the right selection of tools and machinery, coupled with the knowledge and support of All States Africa Concrete Equipment, contractors can develop speciality services at competitive rates and build the businesses on results and reputation.

### ...to construction companies

The benefits of owning large screed and power float equipment include the ability to make a complete offering, and rule out the nuisance factors

that sometimes develop between contractor and subcontractor. With the right network of machinery and skills, the ability to take full control of projects is one step-closer with All States Africa Concrete Equipment. The perfectly level and flat floor with the required finish are well within reach with the versatility and support of All States Africa Concrete Equipment.

### Flawless floors minus the issues

Sven's vision of concrete flooring is the right equipment and the right focus at every step of the process.



At every step of the process, the correct execution of required processes is envisioned through the equipment and tools to be used on a project. As Sven points out: "A clear example of getting something right the first time is the difference between floor levelness and floor flatness. The expense and structural risks of grinding uneven floors or applying self-levelling screeds, resulting from focussing too much on floor levelness, and not enough on flatness, is a prime example of unnecessary and complicated corrective work," he explains.

The benefits of partnering with All States Africa Concrete Equipment are immediate. Having a single project owner per project is a time and money saver second-to-none. Having control over a budget, fully protected from the unforeseen comes a very close second though. The ability to get all the equipment on-site at once frees the team to concentrate on the job at hand, and the on-site storage facility brings immediate convenience and peace of mind. Being secure that the cost of the consumables is limited to their use over a given month secures cash flow as well.

All States Africa Concrete Equipment – it all starts here:  
[sales@allstatesafrica.co.za](mailto:sales@allstatesafrica.co.za)

## SWOT analysis: West and North Africa



**Strength:** The West and North Africa cement market is expected to exhibit stable growth during 2021-26, driven primarily by continuously rising populations, and several construction projects in the pipeline of housing, railways, roads, metro systems, ports, and water and energy projects across the region. Egypt allowed construction to continue throughout Covid-19 and the construction and cement industry recovered faster than elsewhere.



**Weakness:** Nigeria is by far the biggest market in West Africa and its economy is over-reliant on the oil price. In North Africa, Egypt has a 40% overcapacity.



**Opportunity:** China's One Belt One Road (OBOR) and other foreign-funded projects are expected to increase the demand for cement across the region. The governments are rapidly investing in road development and bringing together key financiers, investors, multilateral investment institutions, government ministries, regulators, public and private sector stakeholders to fund and execute infrastructure projects.



**Threat:** Unsophisticated financial structures leave the region prone to cash flow difficulties. Overcapacity puts pressure on prices, especially in Egypt where there is little differentiation in products.



**LUK HAELTERMAN**

DANGOTE CEMENT COUNTRY HEAD  
SENEGAL

**INTERVIEW**

## **Investors in West Africa require certainty and regulatory stability**

At a bare minimum, foreign investors want to know that when they invest in a country, they can plan for the future in an environment when the legal framework will remain the same.

It has become more and more common in certain developing countries that, for reasons of financial weakness, there exists instability in governance. It is difficult for investors to be sure that the legal environment will remain the same if they invest, so that they can make their prognosis. The moment one is unsure about legal stability, one has to question investing in a country.

That will be one of the challenges that investors are likely to face in the coming months and years. Factors such as Covid-19 and perhaps also commitments to address climate change, mean that setting national budgets for most of the West African countries will become more challenging. If that links to instability of governance and legislation, that could have an impact on potential investments in the future. If these developing countries don't have foreign direct investment, they will not come through their economic challenges. A West African country like Senegal needs to create a lot of employment because its population growth is so high.

### **The impact of Covid-19**

In a business like ours – construction and construction materials – effects of crises like Covid-19 are always delayed. This means that when Covid-19 started around March 2020, we only expected to see real effects by August. However, in our country, projects are maybe 10% of the construction market, with the remaining 90% being housing where we didn't really see any effect. Therefore, until now the industry has been relatively free from any major impact of Covid-19.

When it came, the main impact was on delays of major projects – and even then they were not heavily impacted. Most of the projects in Senegal are financed by international debt and are mostly introduced by government. Costs escalated during Covid-19, and with Senegal already not being a rich country we saw effects on project business.

Whether the limited impact of the first wave of Covid-19 will still be the case if we enter a second wave is doubtful. Government, for the moment, is short of money and the repatriation of funds from the diaspora of emigrated Senegalese is also drying up because of the similar situation throughout Europe, where most of the Senegalese are. It is the practice in developing countries, certainly in Africa, that families try to have one or two persons overseas that send some aid to their family. If this dries up, it will influence the spending pattern of the family and could, after a time, have influence on construction.

Why 'after a time'? In this country, bank and market finance is non-existent, which means people fund their housing constructing from their personal savings and reserves. If they have some savings, they build one room in which they all live. Later, with additional savings they may build a kitchen and maybe a second room. As long as they have savings to spend the impact will be limited on our industry. However, once those savings are finished the effects of Covid-19 will become visible.

In Senegal, the direct and immediate impact of Covid-19 is restricted, limited at the moment to the tourism industry as European tourism collapsed. There we see the first signs of Covid-19's effect on housing.

Senegal experienced negative GDP growth for 2020, a factor which in the cement producing industry leads to overcapacity. In Africa, an increase in capacity is not only planned but has already started to be constructed, and once such a project starts cannot stop. There is a concern that most of West Africa will be confronted with overcapacity in cement.

Another issue facing West Africa along with the rest of the world is the fallout from climate change. At the moment this is perhaps of secondary importance because Covid-19 is more immediate and urgent. As we know, the cement industry is not the cleanest industry in view its CO<sub>2</sub> emissions and other noxious gases. This may have an effect in the medium-term on production and capacity figures in Africa and the Middle East.

## Opportunities through technology

With 90% of Senegal's cement production going into housing, it is clear that consumers first priority is food – followed by housing. Considering many African countries have not yet passed the second phase of development, this continent will be an important cement market for some time to come. More and more local production is taking place, and the impact of this on imports remains to be seen. It depends on regulations and other issues. Due to overcapacity, European imports could enter at a low price as most European plant has already been amortised and adequate return on investment achieved. What that will mean for local markets is difficult to say, but Africa will remain a good market.

The fourth industrial revolution is about a technological evolution, with this second element being sustainability. This latter point is more and more a required element in the world and must be managed alongside the technological evolution. Where does our industry rank in this regard at the moment? In view of technology compared to what is around us, I think we are not doing too badly. We are doing quite well, in fact.

Most plant has rather modern technology, as it is a global industry. From a technological perspective, if one talks of sustainability we are ahead of many industries and legally compliant. We, as a unit (Dangote Senegal), make an effort to be among the leaders of our industry. This is certainly true for factors such as over-usage and emissions. Of course we cannot compare to an emissions environment like Europe where there are carbon taxes on production of emissions, which is not yet the case in Africa. ■



## KHALED EL DOKANI

LAFARGE CEO  
NIGERIA

INTERVIEW

### Converting customers to a digital platform

The Fourth Industrial Revolution (4IR) is one of the key pillars that Lafarge is capitalising on. It strongly believes in and focuses on technology. As a result, Lafarge Africa is one of the leading companies in that domain in the Nigerian market.

Over the last year, the company has converted 30% of its customers and 40% of orders to its digital platform, whereby customers' and distributors' information are linked. They are able to make payments, see their dispatches, follow up on the delivery of their products and reconcile their accounts on the platform. Customers and distributors are comfortable with having a live shared system to see their information, their consumption, their stock levels and the reordering process.



The other component of Lafarge Africa's 4IR strategy is how it uses technology to improve its industrial processes, whether it is in health and safety parameters, environmental parameters, monitoring production and creating greater efficiencies. It has systems and tools which are linked to the corporate office where performance and key performance indicators at the industrial plant can be continuously monitored.

## Challenges and opportunities

Covid-19 aside for the moment, what was seen over the past year, and I believe is still the case in 2021, is that the market is facing three main challenges:

- The first is the drop in oil prices. Nigeria relies on oil as a primary source of income. And this price-drop led to a slowdown in all mega projects that the government promised to finance over the past year.
- There was a significant reduction in demand during the Covid-19 lockdown from our key account customers, which are the major construction companies in the private sector. In the first three to four months of the pandemic, there was a complete lockdown in Nigeria, whereby people were not permitted to move. All of the major projects technically closed down, drying up cement demand whether from the mega construction companies or for government projects.
- The Covid-19 lockdown resulted in a train of events. Immediately there was an economic slowdown and drop in oil prices, in turn causing a significant shortage of foreign currency that led to scarcity of dollars as well as high inflation in the local market. Now there is a large gap between the dollar prices declared by the Central Bank and the real dollar trading price in the parallel market.

In summary, the big challenges we face in Nigeria are the mega project slowdown, the drop in government financing of large projects, and the devaluation of the currency compared to 2019 and earlier.

However, from such challenges flows opportunity. For Lafarge Africa, the real opportunity was that it prompted us to focus more on costs, to regionalise the organisation and to make sure that our people were more focused on production and efficiency in production to mitigate the drop in volumes and prices. This has proven to be a sound strategy for Lafarge Africa over the past year. It has led to a significant improvement in results compared to the previous year.

In Nigeria in particular, the real impact of the pandemic started in late March to early April 2020. The company had luckily been able to use many of the learnings of the group, Lafarge Holcim International, since the pandemic started in China earlier, and thereafter Europe. These learnings could be 'copied-and-pasted' in Nigeria in anticipation of the pandemic's imminent arrival. Management categorised the health and safety of its people above all else.

That the pandemic was going to hit the cement and concrete markets was well anticipated, so the company was well prepared with adequate infrastructure for medical support. Its people and contractors

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Technically, the opportunities are always as a result of the challenges that we face in any particular market.





were the top priority in managing the pandemic when it arrived in Nigeria. Secondly, it put the right action plans in place to manage costs to mitigate the anticipated slowdown in the market following the pandemic.

I think we delivered good results in 2020 and we have really managed the situation well so far.

### Regional factors

There are two sides to the coin in West Africa and the rest of the continent. On the one hand, there is major expansion in terms of population with the number of people increasing faster than the growth rate in Europe, the US and other developed regions. This is positive in that it creates additional demand every year. However, on the flip side, converting government plans into execution and fast-tracking these projects on the ground is still a struggle in most African countries. There has to be a more structured way of developing mega projects in these countries and executing them faster by developing the infrastructure and the human resources.

One of the main differences that we see compared to other regions is the gulf between consumption and supply. The supply in Africa in general is still underdeveloped with good potential for investment, though not necessarily in Nigeria. This presents a good opportunity for enhancement of the market and probably a better supply chain in the future. The future of Africa is quite positive.

### Getting to know me

On a personal level, I have been to many countries with Lafarge Holcim, and Nigeria is an interesting country. I believe in networking, even on the sports field. I enjoy tennis very much and I try and play two or three times a week. It is extremely difficult to spend 11 hours or more working each day if you do not look after your health, and tennis does that for me. ■



## SOLOMON BAUMGARTNER AVILES

LAFARGE CEO  
EGYPT

INTERVIEW

### Evolving to a carbon-conscious model

The cement industry as a whole has been rather successful in evolving toward a more carbon-conscious business model in the short- to medium-term. For instance, Lafarge Holcim recently announced its Zero Net CO<sub>2</sub> pledge, and this is what will take the whole cement industry forward.

Key to achieving this target lies in:

- Continuous improvement in efficiency in terms of production.
- A change to a more green product range.
- The need to comply with societal pressures as manufacturing facilities are often located in the midst of communities.





There is a need in the industry to co-exist and collaborate with communities as CO<sub>2</sub> and climate change becomes more and more evident to everybody. Besides Covid-19, which is a temporary challenge, I think the medium- to long-term challenge is how we cope with climate as an industry.

The opportunities for cement and concrete producers lie in the challenge for us to evolve. For us at Lafarge Egypt, the opportunity exists in developing new products, in line with those our parent company, of 'green' construction cement, and creating a more circular economy. With time, cement plants will evolve more and more into recycling plants, with cement production becoming ever more self-contained. The primary challenge lies in the problem of waste as an output, to get to a point where everything is consumed.

That is the advantage of being a big player in the industry. We are not generating any new waste and everything is a product to be sold. There will be a lot of new, environmentally-friendly products, with those producers that react fastest being the winners.

### **Opportunity lies in improving efficiency**

With digitisation, Covid-19 has clearly shown the cement industry that there is a lot of opportunity to improve efficiency. Until now, the construction business has experienced few gains in productivity. Only now has the industry started to realise that digitalisation can accelerate gains at our plants, moving into a space where machine learning and artificial intelligence can address difficulties. A move towards alternative energy sources will create more variables which in turn will make plant more difficult for humans to operate. This is because it becomes too complex to maintain the variety of inputs and still have a consistent product as an outcome.

It is not certain whether the fourth industrial revolution itself will create a lot of new technology, but there will be more efficient use of existing technologies as digitalisation will become a major contributor to that. It will assist in predicting situations when they are considered in advance. Today, the prediction level of a cement plant failure is somewhere between one to three months. If that prediction time frame could be increased to six to



12 months in advance, the whole operating model would change, including how we interact with suppliers and service providers. That is where the scope for innovation really lies - not necessarily having new technologies or cement plants, but optimising existing cement plants or using digitalisation to change the operating model of current plants.

On Covid-19, Egypt has experienced a similar impact as the rest of the world. When the crisis started in March, there was a sharp 15-20% decline in sales and volumes, though it recovered quite quickly. By May and June, demand was almost back to normal consumption rates. One good thing in Egypt was that the government reacted fast to this crisis. It was a good decision at the time to allow major construction projects to continue through the whole period of the crisis, which established a certain base consumption, even while there were curfews in place. Egypt is gradually moving towards becoming a bulk cement producing country, with more mature and more complex projects. Today, we are doing 30% bulk projects compared to 70% bag cement, so it really helped to have this transition to becoming a more mature market.

In Egypt the biggest challenge today is its 40% overcapacity. While this is a global issue, it has been the single biggest impact this year for Egypt's industry, besides Covid-19. On top of that, the Egyptian government has rightfully issued a decree to crack down on illegal construction, but which has amplified the problem. We are looking at roughly 15% less consumption this year compared to last year, in a market which has been declining over the past few years.

Overcapacity puts huge pressure on prices when you can hardly differentiate products, because this is an OPC market. This makes Egypt a little particular compared to other countries, but not so different from many African countries which are struggling either from self-inflicted problems in the cement sector itself, or from regulatory issues as a result of government interference.

## Getting to know me

When not working, I am first and foremost a family man. I try to spend quality time with my family, with my two boys. Besides my family, sport is a big part of my life. Right now, I am taking boxing classes because I feel it is fitting to the situation we are currently in. It requires a lot of training, and gives a holistic view on your body. It teaches you agility, force and resilience. ■

## SWOT analysis: Middle East and Asia



**Strength:** The journey to transform the cement industry in the GCC from an environmental perspective began some five to six years ago, positioning the region well for the future. In China, cement demand is stable inspired by continued investment in infrastructure.



**Weakness:** The global overcapacity in the market is mirrored in the GCC and Asia, putting pressure on prices. In China, supply and demand is again out of synch and the situation of over-supply is expected to last for a long time.



**Opportunity:** Digital transformation creates the opportunity to create efficiencies and cost savings. In China, opportunities still exist in investment in infrastructure which will provide a major demand for cement for the next five years, particularly with respect to high-speed trains.



**Threat:** Sixty percent of Africa's cement comes from Algeria, Egypt and the GCC, particularly Saudi Arabia. There is a drive in West and East Africa to establish their own cement capacity, which would only add to the over-capacity of Middle Eastern countries. In China, there is still a long way to go to reduce over-capacity.



**JOEY GHOSE**

RAYSUT CEMENT CEO  
OMAN

**INTERVIEW**

## How Covid-19 affected the export market

When Covid-19 hit Raysut Cement, Oman, the business suffered a huge loss in the first two quarters of 2020, primarily because it is 50% export orientated. It could not export to its customers, ranging from East and South Africa to the Indian Ocean islands, because most ports had imposed quarantine and closures leading to long delays.

Furthermore, most domestic businesses went into lockdown to the extent that local demand tapered off. The savings the company had built over the past five years were wiped out in the first two months of the pandemic. Raysut Cement operates on a Just-In-Time inventory model, whereby suppliers provide spare parts as and when they are needed. When everything came to a standstill, the business was therefore impacted by a shortage of spare parts and other consumables. It started a self-sufficiency drive by keeping essential spare parts internally, outsourcing less, doing a lot more work in-house and implementing sustainable cost-cutting to be able to survive future unexpected situations.

### Getting into survival mode

To survive and remain sustainable, the company had to completely relook at the way it does business. Raysut is effecting change by empowering its people more and ensuring that every business unit is self-sufficient in the market in which it operates.

A further challenge is the massive oversupply in global cement production and, specifically, in the Middle East where it operates. The Middle East has an annual overcapacity of 40 million tonnes, driven mainly by the UAE and Saudi Arabian markets. These two countries built a lot of capacity in the boom years of the 2000s when much infrastructure was developed in these markets, and which is now pouring into the region.

Adding to the oversupply is the unrest in the region where markets such as Yemen, Syria and Iraq are still in turmoil, so demand is not realistically found anymore. In addition, Iran has a 100 million tonne capacity and an economy restricted by international sanctions, so the only way it can earn foreign exchange is by exporting as much cement and clinker as it can. This it does at government-subsidised rates which is hitting the market at low prices. This is not sustainable. It is vital that governments consider this issue, or it could lead to a complete collapse of vital industries in many geographies.

There are two markets which are really disrupting the regional gameplay. We all understand that the region is not enjoying high oil prices at the moment, and the Middle East is predominantly an oil-dependent region. With the regional turmoil also causing stress in the economy, compounded with the fact that the UAE and

Saudi Arabia have vast excess capacities, there is real pressure on the cement industry. This is filtered to the downstream industry, where companies are fighting for market share and ultimately all losing money.

Oman is currently facing the serious challenge of dumping from the UAE. Somewhere, and sometime soon, a high-level committee needs to be established to bring some sanity and stability to the region. China did a great job with this – 2001 to 2010 were boom years and 2010 to 2015 were disaster years because they had 100% overcapacity. The government then intervened and much of the capacity was removed, limiting plant size and technology, reducing pollution and inefficient capacities, enabling the industry to flourish. We are negotiating with local governments to bring some sanity and control over this, as it causes additional stress to the cement industry.

While globalisation has been a drive we saw prior to this pandemic, Oman is still highly localised. I believe that it is now the duty of governments to start creating some controls and adequate protection for what are considered critical industries for the survival of each country's economy. These strategic industries cannot be subjected to global trends or oversupplies or other factors.

## Seeing the potential of Africa

The continent of Africa still has significant potential for the next 50 years. Raysut certainly has looked at Africa, segregated it, segmented it and developed a strategy for each and every country. Each one requires a different approach because cultures, motivators and domestic governments are all different. We seek to create value for each country specifically and cannot view it as a homogenous export destination anymore. Our strategy is to embrace its uniqueness and do business in Africa with African partners. Consequently, Raysut is setting up companies with local partners, in order to add value to the local economies and be part of that economy in a sustainable way. These partners have the knowledge of how to do business locally, while we bring the technical knowledge and funds.

Technology is going to play a big role, not only in the way we manufacture cement, but the way we manage the business. In the old days when I was a young engineer on the cement plant, I had to radio everything to my manager, who then radioed back an instruction. Today we have a central control room, which is going to become much more sophisticated still. Automation will give a cleaner, better, more efficient product and also enable producers to tailor more products to the needs of the market. It is important to embrace new technology, not only for companies' performance but for the environment as well.

The cement and concrete industry has already significantly reduced the environmental impact it had historically, and that's extremely important in Oman. Raysut is modernising its plants and looking at implementing real-time information systems, so employees are empowered to take decisions for immediate corrective action, which will improve work performance. In addition to that, it's important that producers grow in markets that need the industry, not only to fulfil market demand but also for the job creation and betterment of the livelihoods of those populations.

For instance, for the past 30 years Raysut has been exporting about 50 000 to 60 000 tonnes of cement a month to Somalia, and this year has decided to build a plant there. This will create 400 direct jobs and use 50% local materials. This is what the fourth industrial revolution should aim for – creating value in the market and creating jobs. That, to me, is sustainability and will keep the business running for the next 50 years.

## Getting to know me

In my spare time, I enjoy motorsport very much. I have a collection of historic and classic cars dating back to the 60s and 70s. I participate in long endurance motor rallies, which span 3,000 to 5,000 kilometres, mainly in Africa. To survive these endurance motor rallies, like the Classic Safari Rally, I like to remain fit and active, and so spend a lot of time in the gym. I also like sports such as tennis. I have a 10-12-hour working day but also a four-hour relaxing evening where I keep fit and prepare my cars to make sure they are ready for the next event. ■



## AMR NADER

YANBU CEMENT FORMER COO  
SAUDI ARABIA

INTERVIEW

### Coping in a time of over-supply

There are a number of global challenges facing the industry at this time. Globally, there is a surplus in supply and lower demand, which means that prices and operations are under pressure, and there is a low level of investment around the world.

Secondly, since the Paris Convention [on climate change], there has been a global shift towards sustainability and ESG (Environmental, Social and Governance issues). The cement industry is responsible for 5% of manmade greenhouse gases and currently contributes less towards global emissions than the transportation and power industries. Nonetheless, the cement industry has always been in the spotlight, thereby adding pressure from an operational and technological point of view.

At the same time, the cement industry is struggling to modernise fast enough to meet the requirements of the new generation's talent. The cement industry is not perceived as 'sexy' enough for the new generation. Dealing with 22 to 28 year-olds is not as simple as was the case 10 years ago. Yet there is progress: with digital transformation, the current challenges from a sustainability, environmental management, safety and social impact point of view, the industry is evolving in such a way as to be able to match the requirements of this generation.

Energy consumption is also a challenge because neither coal nor HFO (heavy fuel oil) are considered environmentally friendly. On the other hand, most sustainable power solutions like solar and wind energy are not suitable for heavy industry and cannot be relied on as the main source of power in our space.

If you look regionally, focused on the GCC (Gulf Cooperation Council) countries, the industry remains sustainable. However, in Saudi Arabia specifically, the energy policy of the country is unclear. As an oil-dependent country HFO is the main fuel used for everything. Currently, with its commitments at the Paris Convention, it is becoming more difficult to continue using HFO. This will require a major industrial technological change with a huge impact on costs, because it will require significant investment in all its industries to change to green fuels.

The country's energy policy is a second big challenge. There is an almost 40% surplus in supply versus demand, putting a lot of pressure on the sector.



Last but not least, Saudi Arabia is a young nation with quite a high unemployment rate. With nationalisation rules, laws and policies, talent retention and acquisition is not as easy as it used to be. The talent is available, but businesses have to spend two to three years in employee competency development. This is a cost and a delay in the productivity of at least 30% of the workforce.

In the midst of all these macro-economic challenges, Covid-19 was a significant event that affected businesses around the world, including in Saudi Arabia. Like everyone else, the country started Covid-19 with a strong emergency response plan. Production and sales from March 2020 to date continued without any stoppages, as was the case this year from a financial and operational point of view.

Covid-19 showed the resilience of our team at Yanub Cement to handle pressure and disturbance in the supply chain, in the ability to move freely within the production site and to communicate with others. This made it clear to senior management that digitalisation could be used to advantage. Consequently, digital transformation plans were accelerated with firm support from top management.

### **An industry nobody can live without**

The cement industry faces many challenges, but it is an important strategic industry that no one can live without. The industry as a whole has taken these challenges as an opportunity to transform the business. This started about five to six years ago. Many things are changing within the cement industry in terms of technology, competency, talent management, digital transformation and environmental management. This results in optimisation, better consumption and consistent performance. I would say that energy policies in the industry have also transformed.

In the coming 10 to 15 years, there will be a shift of what used to be considered the classic model of the cement industry. It will change to a less dusty industry, with fewer people and smaller operations. It used to be a race for larger capacity, but the surplus in the market means the trend will be to go back to smaller sizes. There has also not been much capital investment in the cement industry, so major changes will come in how technology changes the industry to optimise performance.

In 2016, we started a two-year strategy at Yanbu Cement called the Performance Improvement Plan. It focused on making plants ready for high efficiency rates, maximum asset utilisation and fully automated operations. This strategy was aimed at maturing the plant from an automation point of view, which saturated Industry 3.0 and created a baseline for Industry 4.0 (Fourth Industrial Revolution).

In 2017, two years after the strategy had been implemented, we started a new strategy called PCPAS – People, Cost, Productivity, Assets and Sustainability. Under the category of sustainability, we introduced two main areas specifically for Industry 4.0, which was to finalise the digital control systems in the plant and to migrate all the data to be usable on the new information systems, which we finalised in 2018.

In 2019, we started the optimisation and digitisation of these tools on a business intelligence level and migrated to cloud software. In 2020, the target was to unify all the systems that we had in place and to increase the mobility of the workforce, by moving from discs or laptops to handheld devices. Our target is to mature fully in Industry 4.0 and induce attrition intelligence on our main assets by the end of 2021.

“

Since the Paris Convention, there has been a global shift towards sustainability and ESG.



## North Africa

Three of the top ten cement-producing countries in the world are in the North Africa and GCC: Algeria, Egypt and Saudi Arabia. Their capacity is around 70 million to 90 million tonnes a year, so it is an important industry in North Africa and in the GCC. Countries like Algeria, Morocco, Egypt and Saudi Arabia to some extent are also heavily populated. Those countries are developing and urbanising, so the consumption of cement in these countries and the rest of Africa, which is also developing, is quite high. The cement industry is at the core of the development strategies of these countries, in addition to exporting to Africa. Sixty percent of Africa's cement comes from North Africa and the GCC countries.

In this region, you have oil-rich countries which are facing the challenges in a completely different way to non-oil-rich countries, where coal is the main fuel. Coal results in a lot of environmental issues according to Paris Convention requirements. All of these countries have signed the convention and are committed to reducing CO<sub>2</sub> emissions. The maturity of environmental loads from a waste management point of view are, in many cases, underdeveloped. Morocco is probably the most mature in this regard. Other than that, they still lag behind in using alternative fuels. While it may be manageable technologically, it is challenging from a supply chain and country management perspective.

There are the energy and economic aspects to consider. Most of these countries have suffered change in regimes over the past decade. Consequently, while their economies are still trying to cope with these new norms, foreign investment is limited and the pressure on the industry from the perspective of capital investment is also high.

This is not the case for oil-rich countries, with Emirates on the one hand and Saudi Arabia on the other. Emirates is an oil-rich country but it is dependent on coal. It has a mature waste management system, so alternative fuels are quite usable. They have a margin of around 15% which is still low compared to Europe (which is about 34-45% in some countries), so there is still work to be done to meet targets. Saudi Arabia on the other hand, is one of the top ten producing countries for cement worldwide. The cement industry is strong in Saudi Arabia, but the market is under tremendous pressure. There is almost one year's worth of inventory on the ground and the supply is higher than demand by almost 40%.

While global challenges apply equally throughout the region, the dynamics of handling these challenges vary because of the other influencing factors in these countries.

\*Amr Nader was the COO of Yanbu Cement at the time of this interview. ■



## HARPREET DUGGAL

BLACK ROCK CEMENT CEO  
UAE

INTERVIEW

### UAE to remain main supplier of clinker to East Africa over foreseeable future

As the Middle East and Africa emerge from the Covid-19 slow down and return to normalcy, construction activity in the region has come back particularly strongly. Real estate prices are at an eight-year high in Dubai. Construction projects which had slowed down are back on track. Cement consumption is up 5% from the pre-Covid days.

Apart from meeting the pent-up demand of the domestic market, the demand in export markets is also robust. Clinker supply from UAE to the traditional export markets of East Africa and Bangladesh remain strong. Though local clinker capacities have increased in East Africa, local grinding units are wary of sourcing clinker from their local competitors and prefer to buy at a higher cost compared to what is available locally. Local clinker producers have been trying to get the import tariff on clinker to be increased to 25%, but I don't see East African governments agreeing to this. I anticipate UAE remaining the main supplier of clinker to East Africa in the foreseeable future.

For bagged cement, there are new growth opportunities expected in reconstruction markets in the region, especially Yemen, Somaliland and Iraq.

While demand is generally up in the region, not everything is 'hunky dory' for the cement industry. There is considerable pressure on margins as energy prices, especially coal, have shot up. At the same time, selling prices are constrained because of the overcapacities and pressure on cement companies to recover their cash flows after the Covid-19 drain.

Another challenge facing the industry in the region is supply chain constraints. Material costs, especially for grinding units and GGBFS plants who depend on imported raw material has shot up because of the all-time high freight costs, though there has been a respite in the last couple of weeks. Because of supply chain issues, spares and inventory costs have risen as companies stock more to accommodate supply shortages.

In East Africa, coal costs have taken a considerable toll on companies' profitability as they have been unable to pass on the increase to customers because of severe price competition. The region continues to have an

excess cement overcapacity as the double-digit growth over previous years attracted many new players which increased capacities hugely as they eyed future markets and exports. However, exports really have not taken off. Indian Ocean islands are significant export markets with little local capacity but East African cement producers cannot compete with Pakistan, Oman and Iranian cement because of the high port charges and local inland transport costs.

## Realistic climate compatible pathways

One of the biggest challenges the cement industry faces today is it's the huge carbon footprint. The cement industry produces almost 8% of all global greenhouse gases. This highlights the huge opportunity before the industry to make positive changes. In the recent COP26, the cement industry through the World Cement Association (WCA) highlighted what it is prepared to strive for to move towards a greener planet, while calling for broad government support to assist this to happen.

For instance, the WCA has called for governments to promote a market for low-carbon concrete by encouraging its use in publicly-funded building projects; to review and update product standards to allow low-carbon concrete to be used in a wider range of applications; and to create the right market incentives for developing and using low-carbon cement and concrete technologies, via carbon pricing, subsidies or other economic mechanism.

The UAE has already made big advances on this front. In 2015, the Dubai Government made it mandatory for all new buildings in the Emirates to use sustainable concrete using green cement – cement extended with slag, fly ash, silica fume and the like.

Cement companies have realised that using environment friendly best practices also improves plant profitability. Companies are doing their bit in improving energy efficiencies, waste heat recovery, increased use of alternative fuels and changing the product mix to reduce clinker factor.

## Innovations in the sector that are exciting

Apart from the greening of the cement industry, I am really excited about the role of artificial intelligence (AI) and machine learning in the cement industry. The cement industry was a bit slow when it came to the adoption of digital technologies. But the benefits of digital technology, including revenue and other margin-impacting factors, are compelling the cement industry to more seriously consider harnessing the power of digital technology. AI creates opportunities to solve issues that could not be solved in the past. By collecting and archiving relevant data, it becomes possible to recognise patterns and detect anomalies that previously remained invisible. With this information, plant operators can take corrective actions before an actual problem occurs. Based on the first results of this technology, cement producers can define new, improved optimisation strategies and new approaches to maintenance concepts, such as predictive and prescriptive maintenance.

The industry is gradually accepting the benefits of digitalisation that connect, monitor and optimise the performance of their assets. Some of the concepts that are seeing quick adoption include plant control, machine optimisation, remote monitoring, preventive maintenance, downtime management, customer relations management and logistics management. Companies are realising that going digital is no longer a fad, but a necessity for them to survive in the coming years. ■



## WEIPING MA

WEST CHINA CEMENT CEO  
CHINA

INTERVIEW

### Chinese production remains stable but flat

The cement production industry in China has remained stable over the past year, with an annual output of around 2.3 to 2.4 billion tonnes. According to cement industry analysis data, China's cumulative cement output in 2019 was 2.32 billion tonnes, representing a decrease of 0.2%. In 2020, the cumulative cement output in China will reach 2.34 billion tonnes, an increase of 1.1%.

Affected by Covid-19, the operating revenues of those Chinese cement companies whose prime operating revenues exceed CNY 20 million was CNY 426.2 billion for the first half of 2020, which is down 6.1% year-on-year. The profit was CNY 76.7 billion, a 6.1% drop year-on-year. The decrease rate narrowed by 2.1% and 3.8% respectively compared with the period January to May.

Inspired by infrastructure investment, cement demand is stable. It is expected that the cement price will increase slightly in the second half of the year, but the market situation will be different geographically. In the fourth quarter, the cement price will hopefully reach last year's highest level. It is estimated that the profit for the cement industry for the whole year will reach CNY 150 billion.

Affected by the pandemic, most ready-mix concrete companies had to stop work and production in the first quarter of 2020. Some companies participated in local emergency response construction, which highlighted enterprises' sense of responsibility and emergency protection for the industry. After mid-April, nearly all the companies fully resumed work and production and output in April achieved a year-on-year growth of 4.7%.

In the first half of the year, the cumulative output of ready-mix concrete enterprises whose prime operating revenues exceed CNY 20 million was 1.152 billion cubic meters, which was a year-on-year decline of 2.36%. In terms of the country's regions, the output of China's largest production area, Eastern China, has fallen by 0.66% year-on-year. With a decline of -14.45%, the output of Northern China dropped the most. Beijing and Tianjin saw a combined decline of 25% year-on-year.

Covid-19 broke suddenly during the holiday of the Spring Festival (traditional Chinese New Year) and spread across China in early 2020. For the cement and concrete industry, the first quarter of the year is the off-season for construction, therefore Covid-19 had a limited impact on the industry at that point. After the Spring Festival, the downstream construction industry delayed going back to work due to the pandemic. Affected by factors

such as traffic control and the two-week quarantine requirements for workers returning to work, construction companies in some regions, especially the regions hit hard by the pandemic, encountered difficulty in resuming work.

Construction projects in China were suspended on a large scale, so demand for concrete in the market declined sharply. In the second quarter, as Covid-19 was gradually controlled, construction projects began to resume again, as did demand in the concrete market. When it came to the third quarter, demand had recovered to its original state.

The major short-term difficulty facing the ready-mix concrete industry is that most of the sales in the industry are paid on account, and most companies' receivables account for more than 70% to 80% of their revenues. Ready-mix concrete products are needed during the whole construction period, therefore the receivable recovery period lasts over a year. The large amount of receivables has always been the challenge faced by the industry, which is especially true for this year. Under these circumstances, the ready-mix concrete industry will, on the one hand, control volume this year and, on the other hand, lower the price for construction projects with better capital to augment competitiveness. Thus, compared with last year, industry prices will see a downward trend.

In the long run, overcapacity is still the main problem in the industry. Thanks to endeavours in recent years, overcapacity has been relieved by way of off-peak production, but there is still a long way to go to reduce overcapacity. The industry still faces the challenge of maintaining continuity of the off-peak production policy.



## There still remain serious challenges

Covid-19 is largely under control now in China, and its impact upon the cement and concrete industry has come to the end, but the macro-economy still faces some challenges:

- Firstly, economic stability is a top priority. In this 'new normal' economy, macro-economic growth will no longer rely heavily on investment. When economic growth is slow, fixed asset investment will drop, the pressure on local governments to repay debt will increase, and the funding for major construction projects will be insufficient. As a result, cement demand may also experience a slight year-on-year decline. It is expected that the cement demand in 2020 will continue to fluctuate during the plateau period, with a fluctuation range of about 5%.
- Secondly, the relationship between supply and demand in the industry has not changed and the current market situation with supply exceeding demand will exist for a long time. The high profits of the cement industry have stimulated more and more companies to avoid off-peak production. Besides, the need to maintain economic growth, environmental restrictions on production have lessened in various regions. This may lead to a significant increase of cement production, which will break the balance between supply and demand achieved in recent years and result in a new round of vicious competition in the market. What is worse, the concrete industry is less integrated than the cement industry and disordered market competition is even more intense in some regions. Affected by this year's pandemic, concrete companies' fund collections are not satisfactory this year. Concrete companies' fund collection has extended year-on-year, and the market is short of funds.
- Thirdly, environmental protection policies are tightening and the price of bulk raw materials is fluctuating. As environmental protection policies are being formulated and enforced more elaborately, the carbon emissions of the cement industry will face severe constraints. Since 2019, the consolidation of the coal industry has also gradually increased, resulting in a rise in the price of coal. Thus, the pressure of cost control in the cement industry is growing greatly.
- Lastly, the growth of the construction industry seems to have slowed down. The entire construction industry has passed its prime. Although the total volume of the construction industry is still increasing each year, the actual construction demand and the building materials used have passed their peak. For example, cement consumption around 2014 was about 24 billion tonnes, but it was only about 22 billion tonnes last year, down 10%.

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Opportunities still lie in the investment in infrastructure, and this will continue to be the major support for demand in the next five years.

Yet opportunities still lie in the investment in infrastructure in various regions and it will continue to be the major support for demand in the next five years. In Shaanxi for example, the drivers for the stable development of the cement industry in the region are key projects such as the high-speed rail from Xi'an to Chongqing and the high-speed rail from Xi'an to Wuhan which were planned during the 13th Five-Year Plan but have not yet started now, as well as the modification of the highway traffic network. More importantly for the cement industry, extension of the industrial chain, development of special cement, comprehensive disposal of solid waste resources and new building materials, may all become new growth points.



### **'Made in China 2025' strategy**

The core of the fourth industrial revolution (4IR) is the in-depth integration of internet, information and intelligence. Undergoing technological changes such as implementing digital technology, robot technology and big data influence our production activities. In response to 4IR, China has launched initiatives like the integration of informatisation and industrialisation as well as 'Made in China 2025'. Whether it is the cement industry or the downstream concrete industry, intelligent manufacturing will be the trend. Adapting to this development trend is paramount.

Reaching benchmarks is the second priority. Large enterprises need to take a leading position to apply and promote the established models which are in line with formulated intelligentialisation standards and through research and development of new technologies.

Large companies should play a leading role in respect of ongoing efforts for amelioration, upgrading and improvement so as to strengthen their own competitiveness. For example, efforts such as the realisation of production procedure, evaluation and simulation, continual optimisation of production procedures, preventative maintenance of equipment and reduction of human intervention will help to achieve energy conservation goals, reduced consumption, increased production, and improved quality. Through the application of big data and information technology, aggregate particle gradation will be optimised, concrete working performance upgraded, the amount of cementitious materials saved and production costs cut.

Policy support is also a factor. Industry associations should motivate the local government's policy-making authorities to support the improvement of enterprises' informatisation and intelligentialisation levels by way of policy incentives, such as tax return and awards by benchmarking enterprises. Unified standards at provincial level can be created by selecting industrial internet application benchmarking showcase projects. These showcases could be selected and cultivated locally in line with existing conditions. The provincial finance authority could then grant awards to benchmark showcase projects, summarise and vigorously promote demonstration experiences, and select and recommend the best as national benchmark showcase projects.

The provincial finance authority can support platforms and service providers who are using industrial internet to engage and cooperate with financial agencies such as banks, insurance companies and financial leasing companies, so as to carry out new financial service pilot projects based on industrial big data, therefore reducing corporate financing costs. ■





## KRIS RUSSELL

SENIOR MANAGER, ARMANINO'S  
ENVIRONMENTAL, SOCIAL &  
GOVERNANCE (ESG) ADVISORY  
SERVICES PRACTICE

INTERVIEW

## Global environmental social governance in concrete production

Environmental and social issues are quickly becoming primary areas of concern for companies across the globe. This comes as businesses face pressure from employees, retailers, supply chains, boards, investors, governments and the public to approach business as a force for doing good. The recent announcement from Lafarge Africa is a testament to its power.

The concrete industry contributes about 8% of global carbon emissions (according to a Chatham House report) and has long been subject to a multitude of environmental regulations. Now, concrete companies are facing increased pressure to consider the large-scale environmental and social impact of business practices. Companies hold the keys to shape their future and build a competitive advantage by making ESG (Environmental, Social and Governance) factors a priority.



Getting started with ESG requires an understanding of why a company in the concrete industry might take on ESG issues in the first place. ESG isn't about a singular approach or a single company trying to solve all the world's problems; rather, it's about assessing a company's ESG impact, then making strategic decisions around areas that fit its goals.

From the start, the idea of sustainability can seem scary or daunting to a concrete company, given the nature of its business. In reality, ESG begins with an assessment that helps companies know themselves better, identify high-impact opportunities and learn how they shape up against competitors. Concrete companies can better understand their environmental and social impact when they're able to benchmark their carbon footprint against competitors or understand their total contribution to emissions in their region.

ESG often affects how a company is run. By challenging themselves to think differently about ESG, concrete companies will not only reduce their environmental impact, but also will have a fresh way to look at how they approach their work and discover more efficient ways to operate. By analysing business practices through the lens of ESG, they can gain a better overall understanding of their processes and financials. ESG efforts can help realise cost savings by streamlining processes and identifying alternatives to conventional processes and products.

### **How ESG assists concrete companies meet the challenges of a changing marketplace**

As others in the building and construction supply chain embark on their own ESG journeys, they expect — and in some cases now require — concrete suppliers to address environmental and social concerns. Demand for low-carbon concrete is rising, as are the use of supplies and suppliers with a lower environmental impact. Concrete manufacturers must be able to show their own ESG progress and meet these demands.

Additionally, as a record number of people change jobs and seek purpose-driven careers, companies without a plan to respond to stakeholder concerns could find themselves facing serious labour shortages and business disruptions.

Younger generations in the workforce truly care about ESG issues and want to work for companies taking meaningful social and environmental action. Solidifying a commitment to ESG can strengthen a company's culture and improve recruitment and retention, as ESG goals centre around a shared purpose of a greater good.





Concrete companies specifically will face challenges finding and retaining innovative engineers and business people who can help improve processes and efficiencies and who care deeply about making progress on ESG initiatives. Making a decision to address diversity, equity and inclusion issues within an organisation now will bring new perspectives into a business and will set it up for success by fostering a more inclusive, equitable workplace.

### Regulations in place and the path towards long-term efficacy

Currently, there's no global mandated framework for how companies report ESG progress, so it's an optimal time to assess ESG progress and potential. Companies that move on ESG efforts now can start to tell their story to investors, employees and communities, thereby fostering goodwill and paving the way for future opportunities.

By the end of this calendar year, the US Securities and Exchange Commission is expected to introduce mandatory ESG reporting requirements for public companies. These requirements will also influence stakeholder expectations for private companies. The European Union is already implementing mandatory regulatory reporting requirements. Businesses will be required to report their carbon footprint, diversity numbers and verify progress by third-party assurance.

Early movers in ESG efforts gain a competitive advantage to win contracts and could even accelerate permit approvals for facilities. They could also attract new investors who see the potential of a company that is rooted in balancing people, purpose and profit and meets accepted standards for doing so.

### Getting to know him

Kris Russell is a Senior Manager in Armanino LLP's newly launched Environmental, Social & Governance Advisory Services practice. An experienced environmental consultant, Russell is recognised globally for implementing sustainability solutions that reduce costs, increase access to capital, improve resilience, enrich employee and community engagement and protect natural resources. As the former Environmental Program Manager of the Dallas Fort Worth Airport, Russell led DFW to become the first carbon-neutral airport in North America and won the 2020 United Nations Global Climate Action Award. While helping clients meet their ESG goals, Russell applies a systems mindset and helps organisations solve problems holistically to improve sustainability and drive positive impacts. His expertise includes creating enterprise sustainability programs that align with strategic plans. ■



## TONY HADLEY

FOUNDER AND CEO OF  
CONSULTANCY BUSINESS TONY  
HADLEY AFRICAN ADVISORY

INTERVIEW

### Cement's time to transform, decarbonise or die

There has been some progress in sustainability in the cement and broader buildings materials and infrastructure industry, with several innovations across the sector, but more must be done. In reality what we see in the window between now to 2025 and 2030 is self-help being most important. This means using operational excellence (industrial and commercial) and the use of existing technologies (such as calcined clay) to drive down CO<sub>2</sub> emissions.

Our thesis is simple in concept, but complex to address in parts: less clinker in cement, less cement in concrete, and less concrete in construction. But all are achievable at low intensities of capex in general. Post-2030 we will see carbon capture and other less developed and capex intensive decarbonisation starting to ramp up.

Complacency and resisting change was historically one of the biggest issues in the broader construction sector. Breaking away from the way things have always been done in the cement, concrete and construction industry will be key to ensuring more sustainable practices. Considerable progress could still be made by 2025, but the industry has to act now, and yet for now only one major has committed to carbon zero by 2050. As to how I rate the current level of progress towards environmental sustainability by cement companies and the construction industry, it's a large question with the short answer being 'historically very poorly'. One reason is the desire by the industry to maintain high barriers to entry in various markets. This was accomplished by having relevant standards and rules that were driven by the industry and difficult to modify. At many plants around the world, industrial performance has been permitted to languish at a less than optimal level. In general, there has been a wide divergence in implementation of the levers of decarbonisation in our industry, and extremely slow progress towards best-in-class within the most relevant KPIs (Key Performance Indicators).

A classical example of that would be their level of use of alternate fuels derived from waste fuels, tyres, industrial waste and biomass. Progress over the last 30 years has been from the use of almost no alternate fuels, to an average 18% usage across our selected database. While that is progress, it has to be compared to some plants where the best-in-class for alternate fuels usage is close to 100%. Alternate fuels are a big lever for decarbonising. Therefore, when you benchmark you have to do so against the best, knowing that by the time you get to that target, the best will have gotten even better. Variations in the percentages of clinker used in cement are also huge, whether viewed by regional or company variances.

The industry is traditionally quite unambitious. I can think of the Hima cement plant in Uganda that 20 years ago was already running at 60% alternate fuels, which is excellent, while the vast majority of the African cement industry is today at, or close to, zero. South Africa is close to zero too, partially because the country has no appropriate legislation for waste. If there was appropriate legislation to incentivise alternate fuels, there would be an increase in the use of waste in South Africa.

Yet our industry is suddenly waking up, with the best companies significantly accelerating their decarbonisation programmes over the last 18 months. The visible leader of the pack is Holcim, with the invisible leaders – because they talk about it less – probably being the Chinese and the Indian cement companies; and their equipment suppliers.

## Investors pushing the agenda

The pressure to decarbonise has come not from governments, not from legislation, not from activists - it's come from investors, with the share prices of the big companies having been drastically downgraded by investors for not having taken decarbonisation seriously. Two years ago, there was a blanket disinvestment by many investors from cement companies and we saw their price to earnings multiples dramatically fall as the ESG ratings of the listed cement companies were downgraded.

Money pulls the levers, and the big investment houses have for some time been saying they are no longer going to invest in coal, or in businesses which are not transforming their carbon footprint. They will only invest if they're comfortable that businesses they're investing in have a committed route to carbon zero – or have announced their roadmap to carbon zero. They're not interested in greenwashing, but genuine transformation.

As a result, real change is happening. Some companies like Holcim, under new leadership, started looking aggressively to improve their ESG rating. The industry is still rather unloved, however, partially because of concerns that it's going to be a (capex intense) struggle to decarbonise – partially because the industry has a history of being bad at doing it. Though I believe there is genuine change, it is certainly not yet the case in the majority of companies.

For instance, there's one midsize European company which analysts speak of as un-investable, because the company has no strategy to decarbonise, except by spending huge, and in our view partially unneeded capex on it. The message from investors is, if you haven't got a strategy, get set to suffer. In contrast, a company such as Holcim is going as far as it can to pivot their business mix. They're reducing the importance of cement in construction through sustainable practices using modular, lightweight materials which require less concrete foundations, reducing the carbon intensity of each building.

Indeed, the industry has been galvanised into action with the big companies like Holcim and Heidelberg now urgently looking to find ways to decarbonise, and surrendering some of the old concerns about maintaining barriers to entry. We're seeing a string of such announcements from our industry regarding decarbonisation of cement and concrete, and pivoting slightly into other sectors where they feel it's going to be easier to achieve that carbon zero target. They've set targets that, in my view, are still conservative, easy targets which they want to be sure of exceeding. Hopefully they'll become more ambitious over time. But if business leaders see their share price going down versus the competition that is, we hope, likely to create some urgency.

The key to decarbonisation of our industry starts with clinker as the intermediate product in cement, manufactured in a kiln which is the most energy intense in terms of the mixture of heat energy, power, and in high process emissions of CO<sub>2</sub>. And that's today's focus of how we decarbonise.

This requires action not just by the industrial element. It's got to follow through to the commercial (product) element; the standards; it requires an evolution in the product; it's the specifiers; and finally government can have a huge role. Governments have to be convinced that we've been producing more CO<sub>2</sub> than necessary for 100 years, simply because no one bothered to change the rules. You need to convince engineers and architects to change. We're in for a massive acceleration in the process of transformation – in which there are going to be winners and losers. The winners are the smart guys, the losers are the ones with their heads buried in the sand. Looking to commercial and industrial excellence first requires a change of mindset of the business leaders.

## The levers of this transformation

There is no single lever of the transformation. Different geographies have different levers and different potential levers. If one has a lot of local biomass, or domestic / industrial waste for instance, you can use alternate fuels. If you have a lot of less carbon intense alternate materials, one can use those. The common denominator will be 'industrial and commercial excellence', something which we're a long way from yet in our sector.

Manufacturer's simply have to make sure their products are containing the lowest intensity of CO<sub>2</sub> from energy, process and associated sources, and the lowest possible clinker factor. There's one transformational technology that's been known of and not widely exploited for years – calcined clay. Clay, when calcined through heating, can be used to partially substitute clinker. Calcined clay has a CO<sub>2</sub> intensity of approximately 25 to 30% of that of clinker. My company's doing a lot of work with producers around the world to accelerate the introduction of that technology, as it's applicable to a significant part of the market, but the learning curve is still steep.

Not everyone favours it, both because it requires capital expenditure (but significantly less per tonne than clinker), but worse as it adds new 'clinker' capacity in many markets already with acute overcapacity.

As mentioned earlier there are more complex carbon capture options, carbon storage, and the potential to use CO<sub>2</sub> for other purposes, and these we think will come into play from the 2030s onwards. These latter are generally for now highly capital intensive and are still being proven in many cases. Most companies are only willing to do those if they get government subsidies.

Another of the big levers to encourage (and reward leadership in) decarbonisation is carbon tax. These have been a bit of a mess in Europe over their first three phases as they were far too generous to the industry. In fact they encouraged the industry to keep in operation their old, inefficient capacity in order to retain carbon credits. I believe it was rather a failure, in that it simply transferred billions of dollars to cement companies, almost penalising change. As we move into phase four of the scheme at the moment we see a much better alignment with broad decarbonisation goals. This has led to carbon prices increasing in Europe to about 60 euros/tonne. Therefore, bad performers will be less profitable than good performers, thereby incentivising action. Many think the carbon tax in Europe may in time go to 100 euros/tonne, which will dramatically change the carbon picture. There is a carbon tax in 48 countries globally, including South Africa, with the latter at approximately R120/tonne.

Some developing countries hope they will not have a carbon tax, but it will be pushed by the most efficient producers for competitive reasons, and because it will benefit CO<sub>2</sub> reduction. Remember, governments are always happy to raise taxes, so it's a relatively easy sell to government. ■



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