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This issue's front cover...

Happy New Year

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Dear readers,

Welcome to the January 2016 issue of *Global Cement Magazine* - the world's most widely read cement magazine. We hope that the break over Christmas and/or New Year holidays has provided the opportunity to relax, reflect on the busy year that was 2015 and prepare for the new challenges that 2016 will inevitably bring.

To help to start the year off on the right foot, this issue features a number of articles that show the current state of the cement industry and where it might be headed in the future. Kicking off, *Global Cement*'s Robert McCaffrey addresses the realities of operating in the current 'new normal' or 'post growth' environment. How can producers in stagnant markets step up their economic performance (and survive) once all costs have apparently been cut and all margins squeezed? Some of the answers may come from the finance sector (and others), as explained from Page 8 onwards. Also with an eye on what our sector can learn from other industries, Siemens' Stuart Moran looks at what pioneering firms are doing in terms of optimising the operation of drives and motors (Page 12).

This issue also brings a round-up of recent merger and acquisition events, with RBS' take on the LafargeHolcim merger, HeidelbergCement's acquisition of Italcementi and where the future may be headed (Page 16). Continuing the 'trend for trends' *Global Cement* also presents an abridged version of the second part of the forthcoming *Global Cement Top 100 Report 2016*. The excerpt analyses the cement industries of the countries with the largest cement capacities divided by their respective populations (Page 20). This process gives rise to some interesting results: The Top 10 by this metric are predominantly oil producers; Cement industry leader China does not feature in the top 10 but Cyprus and Bhutan do; Second-largest cement producer India isn't even in the top 100 places by capacity/population - what an opportunity!

Elsewhere, we have features on plant modernisation at Thatta Cement (Page 28), fans (Page 19) and Amy Saunders' detailed look at the often-neglected '-stan' countries of Central Asia (Page 44). The countries covered - Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan - have been attracting a lot of cement industry investment recently, especially in the past 12 months, with numerous plant upgrades and new projects in the offing. These six countries have a shared cement capacity of 70.1Mt/yr at present, but another ~27Mt/yr of capacity is already announced, planning or under construction - surely a region to watch in 2016!

We hope you enjoy this issue of *Global Cement Magazine* - the world's most widely-read cement magazine!

PKEdwards

Dr Peter Edwards
Editor

Editorial Director
Dr Robert McCaffrey
rob@propubs.com
(+44) (0) 1372 840951

Editor
Dr Peter Edwards
peter.edwards@propubs.com
(+44) (0) 1372 840967

Deputy Editor
Dr Amy Saunders
amy.saunders@propubs.com
(+44) (0) 1372 840955

Web Editor
David Perilli
david.perilli@propubs.com
(+44) (0) 1372 840952

Commercial Director
Paul Brown
paul.brown@propubs.com
Mobile: (+44) (0) 7767 475998

Business Development Executive
Sören Rothfahl
soeren.rothfahl@propubs.com
Mobile: (+44) (0) 7850 669169

Company manager
Sally Hope
sally.hope@propubs.com

Subscriptions
Amanda Crow
amanda.crow@propubs.com

For full details on article submission, please see:
www.GlobalCement.com

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First Floor, Adelphi Court 1 East Street,
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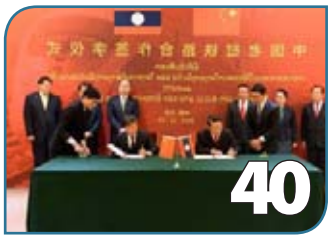

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Robert McCaffrey, editorial director, Global Cement Magazine

The global growth pivot: Implications for cement

Economic growth has stalled in a number of developing nations, while developing nations in south Asia, southeast Asia and Africa are powering forward. This article examines the wider implications of future growth scenarios on the global cement industry - both from the viewpoint of equipment manufacturers and for cement producers themselves.

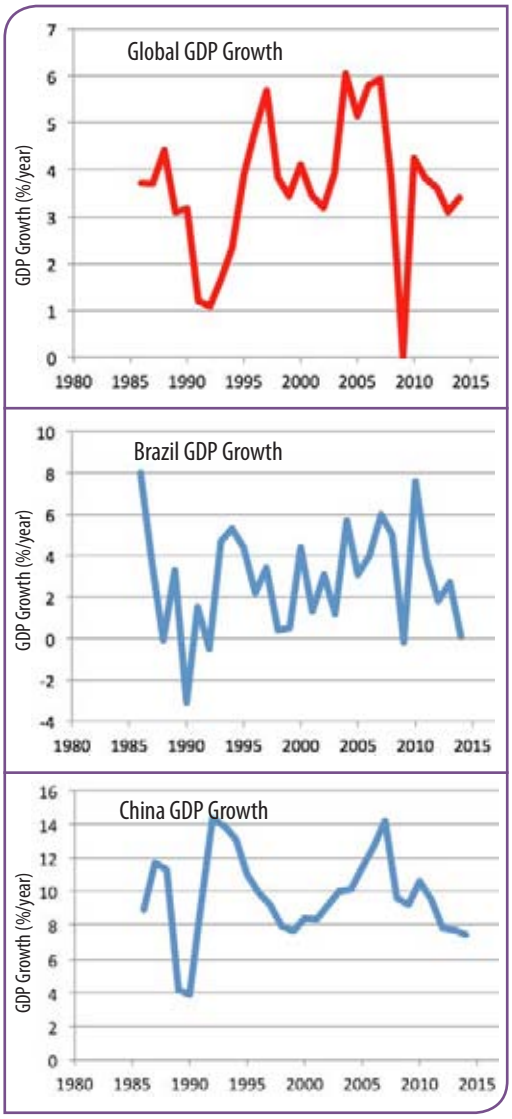
The world economy seems to face a number of factors that together tend to reduce the current level of economic growth:

- Financial/banking instability;
- Reduced state income from oil production (for oil-producing states);
- Political instability (particularly in the Middle East and North Africa);
- Emerging pandemics such as Ebola;
- Environmental degradation;
- Collapse in commodity prices;
- Overpopulation;
- High unemployment levels;
- Soft demand for goods;
- Corruption;
- Low levels of inflation or even deflation;
- Ageing populations.

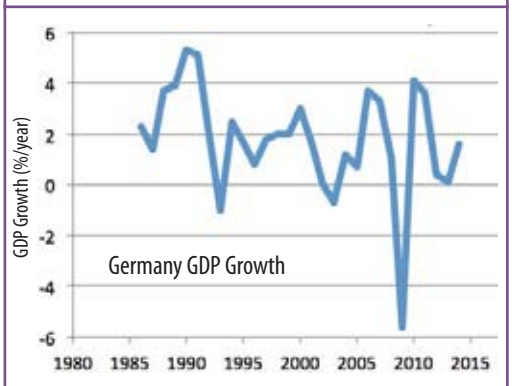
On the other hand, a number of other factors may partially or wholly cancel-out these trends, leading to support for economic growth:

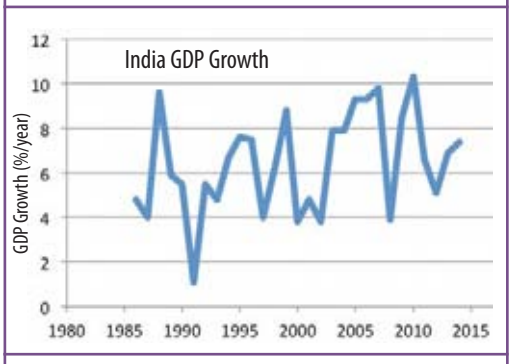
- Increasing levels of automation and roboticisation in the developing nations;
- Increasing industrial efficiency (including 'Industrie 4.0'[1]);
- The development of entirely new industries;
- Population growth;
- Improvements in education and health;
- Infrastructure investments;
- Technological progress;
- Productivity growth;
- Inexpensive energy (oil and coal);
- Spending on environmental impact abatement;
- 'Cheap money.'

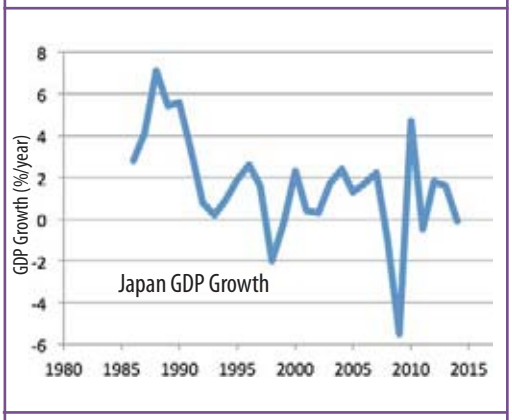
The balance between these factors is likely to govern the economic growth story in any given country. According to World Bank data[2] the global GDP growth rate has been remarkably steady for the last few years (on an unweighted, country-based average) being between 3.1% and 3.8% between 2011-2015. However, looking further back, we see that the last few years seem to be an unusually quiet period (a sentiment backed up by the VIX 'fear index.'[3]) with periodic booms and busts in the global economy happening every four to six years. Greed and fear are said to be the two predominant emotions at play in capitalist markets[4] - and it may be useful to view global GDP growth as an expression - on a global scale - of whether the world is gripped by either fear or greed at that moment. The graph of global GDP growth (above, in red) would tend to suggest that we are currently in an intra-fear, intra-greed period - which could go either way in the future.

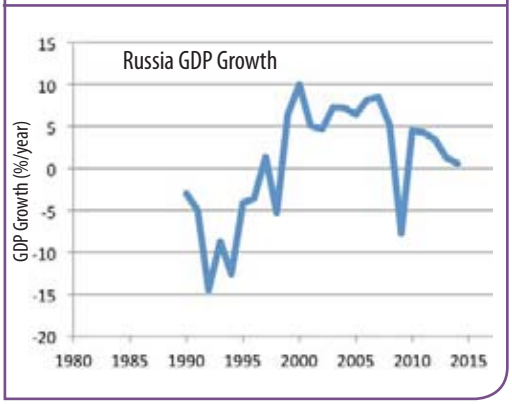


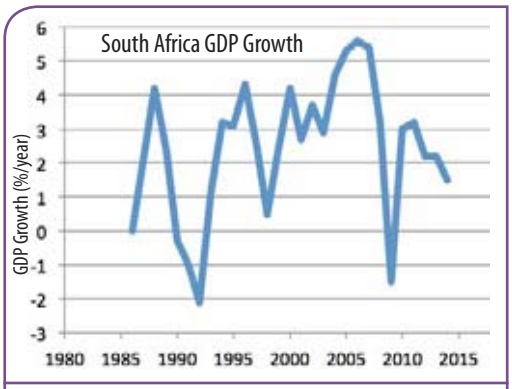
Looking at the GDP trends of some of the individual leading industrial countries, we see a mixed picture, which nevertheless tells an over-arching story of slowing growth in the developed world. South Africa and India have broadly increasing

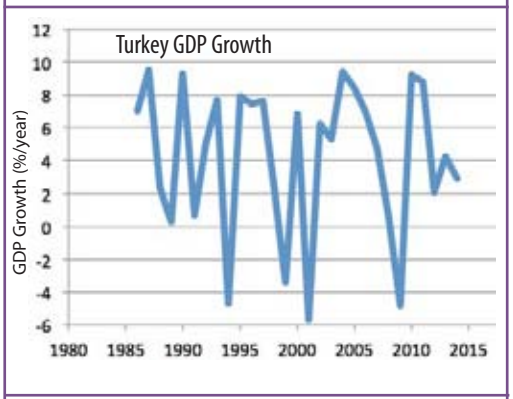












trends, Brazil and Turkey both have erratic GDP growth trends, while China, France, Germany, Japan, Russia (post-2000) and even the USA can be seen to exhibit broadly decreasing GDP growth trends: even though they are growing, they are doing so at an increasingly slower rate.

According to the International Monetary Fund's short-term World Economic Outlook of July 2015,[5] there is a short-term slowdown in developing nations: 'Global growth is projected at 3.3% in 2015, marginally lower than in 2014, with a gradual pickup in advanced economies and a slowdown in emerging market and developing economies. In 2016, growth is expected to strengthen to 3.8%.'

The report continues, 'In emerging market economies, the continued growth slowdown reflects several factors, including lower commodity prices and tighter external financial conditions, structural bottlenecks, rebalancing in China, and economic distress related to geopolitical factors. A rebound in activity in a number of distressed economies is expected to result in a pickup in growth in 2016.' The IMF points out that 'Lower commodity prices also pose risks to the outlook in low-income developing economies after

many years of strong growth.'

Looking at developed economies, the report suggests 'the underlying drivers for a gradual acceleration in economic activity in advanced economies - easy financial conditions, more neutral fiscal policy in the euro area, lower fuel prices and improving confidence and labour market conditions - remain intact.'

Forecasting into the short-term future (to 2017), the World Bank suggests[6] that developed nations will average growth of around 2%, that the global average will be in the region of 3% and that developing nations will average a growth rate of closer to 5% (with stand-out performance from south east Asia, south Asia and Sub-Saharan Africa).

Moreover, in the longer term - out to 2050, strong GDP growth will continue to be concentrated in today's developing nations. Indeed, a recent report from PwC[7] has suggested that there will be a fundamental rearrangement in the Top 10 largest global economies by mid-century, with Mexico and Indonesia joining the top 10, and both France and the UK dropping out (and with Germany sinking from 5th place to 10th place). By 2050, both China and India may have larger economies than the US, and will be the largest and second-largest economies in the world, respectively.

Above: Fauji Cement Company Limited Plant (Line-II), District Attock, Pakistan, by Khurram Shahzad Azhar, Fauji Cement Company Limited.

Global GDP growth is currently not notably weaker or stronger than its 'normal' level in the past, of between 3-4%/yr. Different countries exhibit different trends, with a lot of 'noise' complicating the picture. China has gone 'off the boil' and seems set for a more or less 'hard landing' - upsetting the economies of its major trading partners. However, with its low labour costs, vast workforce, natural resources and burgeoning middle classes, it is likely to return to economic health, albeit at a 'new normal' level. What is quite clear from the data is that the growth 'torch' has passed from developed nations - which now exhibit low-, no- or negative growth (for example Russia, Germany, France and Italy) - to the developing nations (India, Indonesia, Thailand, Philippines, Bangladesh etc). The 'pivot' of growth in the world has tipped - in favour of developing nations and away from those considered 'developed.'

The next part of this article will examine the implications of this change for the global cement industry.

Growth change: Implications for cement

Developed nations require less development than developing nations. They will tend to spend less on infrastructure - partly because it has already been built. Once the railways, roads, bridges, schools, hospitals and so forth have been built, (when cement consumption can surge past 1000kg/capita/yr) then infrastructure development tends to switch to a 'maintenance mode,' and per capita cement consumption drops to a sustaining level of 300-500kg/capita/yr - as comprehensively shown by Emma Davidson in *Global Cement Magazine* in 2014.[8]

As has been seen around Europe since the Great Recession of 2007-201? and even before, industrialised developed nations have not needed the full complement of their pre-crisis cement production capacity. There have been widespread factory closures, 'mothballing' and demolition. Some plants that are clearly uneconomic to run (and where there is no demand for their products) have been left 'open' in order to preserve carbon permit allocations. These 'zombie' cement factories - already well-known in China[9] - may be sustained for a variety of reasons, but a Darwinian clearance of once-viable capacity will eventually have to take place.

In cement plants in low- or no-growth countries and regions (where markets are typically still oversupplied with cement and there is strong competition on prices) capital expenditure will continue, albeit at much lower levels than previously and with money being concentrated in the following areas:

- General factory maintenance;
- Environmental impact abatement (generally in response to ever-tightening regulations);
- Alternative fuel projects (in an effort to decrease fuel costs and to 'go green');
- Electrical energy efficiency projects (when electrical energy can represent up to a third of production costs, then variable speed motors and more highly efficient grinding will become paramount);
- Clinker factor reduction (with clinker the most expensive component in cement, companies will increase efforts - and expenditure if required - to be able to use alternative supplementary cementitious materials such as slag, ash, silica fume and rice husk ash).

New cement plants or additional/replacement clinker production lines will be the exception, and will be constructed only where they augment very inefficient older capacity. Additionally, we may see cement companies increasingly adding value to their basic products through the development of new higher-value-added products:

- Oil well cement;
- White cement;
- Sulphate-resistant cement;
- 'Low CO_2' cements;
- Cement-based boards and panels;
- Cement-based building elements, including autoclaved aerated concrete/autoclaved cellular concrete blocks.

New dawn for developing nations

Developing nations, on the other hand, will be in a very different position for the next few decades. Operating in markets that are sold-out and where every additional tonne of cement that can be produced will add to a company's bottom line will mean that capital expenditure will be active and will be directed in different areas to those in developed nations:

- Additional production lines;

- Additional clinker grinding capacity;
- 'De-bottlenecking' projects to allow increased production capacity from existing equipment;
- Increased efficiencies in loading and logistics to be able to cope with product distribution;
- Investment in marine import/export loading/unloading facilities to be able to take advantage of the global oversupply of clinker;
- More containerised grinding facilities that can be set up easily to cater to local hot-spots;
- A return of floating terminals;
- 'Leapfrogging,' where more basic information systems that might have been used during the early 'digital age' in developed nations are ignored, with cement producers choosing mobile-phone and app-based ordering, payment, GPS-based order tracking and automatic payment reconciliation and accounting.

Industrie 4.0

The German concept of Industrie 4.0 - the supposed fourth industrial revolution[1] after steam, mass production with electricity and the digital revolution - is starting to gain some traction. Industrie 4.0 envisages industrial production being fully-integrated with all digital technologies, including the internet of things, as well as having decentralised machine-based decision-making autonomy and a degree of artificial intelligence (AI).

However, the cement industry is already a long way down the road towards full implementation of the concept of Industrie 4.0: Imagine that you are a building contractor in Jakarta, Bangkok, Manila, Dhaka, KL, Mexico City, Seoul or Dubai: In a few years this might be the workflow -

- Your job needs 100m^3 of concrete: You order it for 6am the following morning to your job site, using an app on your mobile phone. The payment is automatically earmarked in your online business account for payment upon job delivery;
- The system at the cement plant receives the order and it is added to all the other orders for the next day.
- The plant's AI system varies the production target for the next 24 hours based on incoming orders and stock levels and instructs the cement plant to create the correct amount of each type of product in the most cost-efficient manner possible;
- Ten thousand sensors around the cement plant report on every aspect of material processing, material flow and pyroprocessing: Sensors send data back to an online AI-enabled virtual model of the workings of the cement plant which fully controls production. A person is employed to make sure that no-one switches off the computer on purpose: A dog is employed to bite the person if it looks like they might switch the system off by accident;
- The plant's AI system automatically varies the produced cement's composition and mineralogy based on a virtual future model of 28-day mortar cube performance characteristics;
- At the allotted time the cement is collected by the RMC manufacturer in a truck that is fully-GPS enabled and trackable by owner and customer alike;
- The final product is delivered to the right place at the right time: The customer clicks on a link to allow payment to proceed.

No paper has changed hands: Everything was digital: There was no possibility of anything less than 100% efficiency: The computer sees to that. No employees have been put at risk doing dirty jobs: There are no employees and no jobs.

If you think that this is a far-fetched scenario, then recall the transition from shouting red-faced traders in the bear-pit in the old commodity exchanges to the quietly-humming black boxes that now house the algorithms that do the trading now. The steps that will go to make the cement factory of the future already exist - Industrie 4.0 is just about linking them up.

Although Industrie 4.0 is a German concept, it might just be that those rapidly-developing cement industries of the Far East and in Africa, where mobile telephones are becoming the norm and land-lines are an anachronism, will be those that can take best advantage of 'leapfrogging' to gain a huge advantage over the legacy technologies of the West.

Conclusions

The corollary of the pivot from developed to developing nations for equipment manufacturers is fairly plain: Orders will increasingly come from 'non-traditional' markets. The 'old' West will concentrate on saving money in the face of dwindling growth: The 'new' East (and Africa) will concentrate on making money in the face of surging growth. In new lands of opportunity there will also be new competitors - or those with a local advantage.

LafargeHolcim has perfectly read the runes and has ditched its European heritage to go and make money in the new New World of greater growth. Others will follow. In 2100, south Asia, southeast Asia and Africa will all be dotted with gleaming new cities of skyscrapers, roads and bridges - all made in smart factories - and all still made with cement.

Above: Votorantim Cimentos – São Paulo, Brazil, by Evandro Christofari of Endress+Hauser Company. The plant is one of the oldest cement plants in Brazil and is in an economy that is currently over-supplied with cement.

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Stuart Moran, Siemens Process Industries & Drives

Lessons in efficiency for the cement industry

The global cement industry is a massive user of energy due to the intensive processing required to convert raw materials into commercially viable products. However, it is also an industry that is increasingly conscious of its impact on the environment and is trying to innovate and modernise in order to help it become more efficient on a worldwide scale. Several years of mothballing through a world recession have meant that a great deal of equipment in the industry requires reviewing, updating, refurbishing or replacing altogether. Learning from other sectors is one way the cement industry can quickly get up to speed with the latest innovations and examples of best practice to raise its own game.

Integration and automation are buzzwords across many industries at the moment. Being able to fully integrate control and operating systems on conveyors and associated processing equipment means they will function more smoothly, perform better and have a higher percentage of availability – throughout their longer lifecycle. There is a global industry leader in this area: the automotive industry. The UK's automotive industry really does lead the world, just as UK technology is behind most of today's Formula 1 race cars. What can the cement sector learn from it?

The UK automotive sector has invested more than Euro8.5bn in the last two years (EEF 2014), and it turned over Euro786bn in 2014. A total of 1.58 million cars and 2.5 million engines were made in the UK in 2013. The efficiency of the automotive sector is a global success story and its drive for efficiency, flexibility and control have made it what it is today. The car industry embraced the concept of integrated drive systems and total integrated automation long before other sectors and now is the time to benefit from its experience.

The UK car industry, which once built its products slowly, poorly and in isolation, had to change or die. Having searched for examples of best practice from all over the world, it embraced the concept of integrated drive systems and total integrated automation – as it turns out, long before other industry sectors had even come across the idea. Now is the time the cement industry can benefit from its experience and take a short cut to efficiency.

In conveying, sorting, processing and picking, the concepts remain much the same: seamless and integrated productivity is imperative for business success. Integration offers a future-orientated solution that can be individually tailored to suit almost any application, with cost-effective material flow, precise positioning, the efficient spanning of long distances

Right: A lot can be learned from the automotive sector.

and smart technology packed into the smallest space. Another benefit of integrated technology is consistent and continuous condition monitoring, 24 hours a day, enabling plant to be more fully available, with planned maintenance able to be scheduled in. This is a vitally important factor to the cement industry, where an unscheduled plant breakdown can mean huge costs in lost production.

Integrated drive systems

If we look at the concept of integrated drive systems (IDS), we can see that they cover three dimensions: horizontal, vertical and lifecycle integration. Horizontal integration covers all components within the 'drive train,' such as variable speed drives, motors, gearboxes and couplings. Correct specification leads to a drive train that is perfectly matched to the load requirements, which maximises efficiency and reliability throughout the lifecycle. Plant availability can be boosted by up to 99%.

Vertical integration: by incorporating controllers that also acquire data, the ability to predict and avoid a problem becomes a welcome reality, with planned maintenance scheduled and performance and energy usage thoroughly monitored. Engineering time can be cut by up to 30% using this method. With the new European energy related product standard now in force (EN 50598), being able to monitor and control motor-driven systems will become increasingly important in all industries. Knowledge is truly power in this situation.

The lifecycle integration dimension complements the other two, ensuring a drive system is always working to its maximum potential and supporting the process 24 hours a day, 365 days a year, throughout its operating life. It can help reduce maintenance costs by up to 15%, a key factor in the highly competitive cement industry.

Improving efficiencies in systems such as conveyors need not be limited simply to conveyor machinery. At a cement works in the south of England, using a more efficient motor and drive in a grinding mill upgrade saved over Euro220,000/yr and paid for itself in less than two years. It also reduced CO_2 emissions by 1487t in eight months. Power consumption was lowered by 37% by using this type of integrated automation and drive system.

Best technology

Taking the best of integrated technology from the automotive industry, one of the most popular solutions is distributed control, close to the motor, which provides a flexible and efficient solution for operators. Here, the topology is based upon geared motors, distributed inverters and motor starters as the linked elements. Using PLC controllers and HMI operator panels for control, detailed monitoring and diagnostics of the plant or conveyor system puts all information at the operator's fingertips.

Left: Integrated drive systems mean longer lifespans with enhanced performance.

The UK car industry, which once built its products slowly, poorly and in isolation, had to change or die...

These units are combined with an overload-protected power supply, distributed control through additional PLCs and variable speed drives, providing a high degree of flexibility, IP65 protection, compact modular design, simple installation and fast commissioning. This type of system uses Profinet or Profibus for communication, parameterisation and diagnostics, and the digital inputs and outputs of the units can be used as distributed I/O for the control.

Using variable speed drives that are capable of energy recovery means braking resistors are not required and integrated 'safe torque off' safety function means encoders are not required. Replacement is simple due to the modular design and optional memory card. Additional functions of a unit like the Simatic G120D include integrated positioning capability via HTL or SSI encoder and basic PLC functionality. These systems are maintenance-friendly, easy to replace and can incorporate high levels of safety technology into the process too.

Geared motors such as Simogear provide excellent flexibility, ideal for conveyor and processing systems, with a wide range of gearbox types, mounting options and optional pluggable connection systems to ISO 23570 standards, mounted encoders and brakes. RFID systems and code reading systems can also be installed.

Right: Distributed control improves efficiency and safety.

Building safety into the system

Built-in safety measures on all equipment used for processing and conveying applications are increasingly becoming critical priorities for cement producers, in an industry where temperature extremes, dust and hazardous environments are common. A high degree of protection is inherent in standardised, modular products that are designed to function together and this protects people, the machinery and the environment. Distributed and comprehensive control, drive and switching technology on longer distance conveyors can provide many built-in safety features, such as: Safety integrated systems and modules; System consistency; Greater availability (fewer breakdowns); Optimised outputs for global competitiveness; Built-in overload protection; Simplified retrofits and modernisations; Quicker restarts after modifications; Easy expandability and integration; Helpful diagnostic tools; Continuous, live monitoring and; Efficient and planned maintenance strategies.

Siemens is the world's top supplier of machine safety systems (IMS Research 2012, *'The World Market for Discrete Machine Safety Components'*) and is very active in the global automotive industry. It is becoming increasingly active in the global cement industry as the latter adapts to the need for safe, fully integrated operations.

Totally integrated automation

In a world where efficiency and productivity are decisive success factors for manufacturing industries, being able to totally integrate the automation elements can give a company a crucial edge. Being able to control ever-increasingly complex machinery and plants and to make all automation components inter-operable not only lowers costs; it also reduces engineering time and produces greater flexibility for a genuinely future-proof system.

A major UK-based Japanese car manufacturer implemented this style of fully integrated drive and PLC solution including Simogear, Et200 pro frequency converters and direct online starters for the drive train and PLC, safety, RFID and Profinet. This fully integrated solution allows line-wide visibility of all components on the HMIs, so that diagnostics are far superior, minimising downtime and improving line OEE. The Profienergy profile was integrated to allow devices to be switched off during stoppages, such as break times, giving additional energy-saving results.

Being able to totally integrate automation elements can give a company a crucial edge...

Conclusion

Using the experience of the world-leading automotive industry can give the cement industry some very useful short cuts, such as the use of distributed control for flexible, efficient solutions. As the global cement industry gears up for increased production, now is the time to invest in new equipment and processes, optimum solutions and safety improvements, to ensure a successful and efficient future.

Right: A typical control panel incorporating safety features.

Rupert Taylor, Head of Industrials EMEA, Corporate Advisory, Royal Bank of Scotland

Looking towards 2016: Mergers and acquisitions in the global cement sector

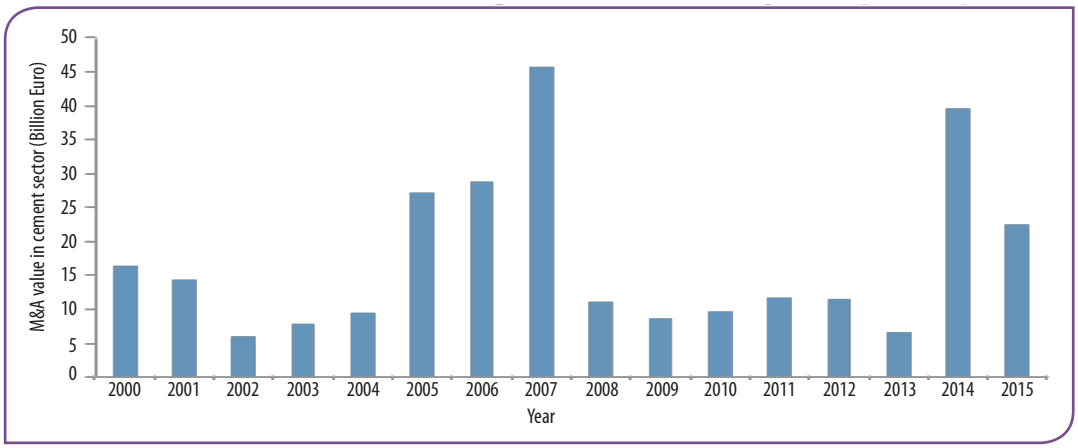
The past two years have been a busy time for global cement mergers and acquisitions (M&A), especially in developed markets, with merger activity at levels not seen since before the global financial crisis, as evident from Figure 1. Here RBS' Rupert Taylor looks at the current state of play in the sector and what we might expect in 2016...

After a wave of consolidation before 2008, driven by large, often debt-funded deals, the global financial crisis saw a number of major cement players faced with declining financial performance and increasingly stretched balance sheets. Earnings before interest, tax, depreciation and amortisation (EBITDA), a measure of earnings, fell by over 20% between 2008 and 2009 for five of the largest global players on an aggregated basis.[1] Financial leverage (as measured by net debt to EBITDA) increased materially at a number of players, with major players including Cemex, HeidelbergCement, Italcementi and Lafarge all having their external credit ratings downgraded by one or more of the three major credit ratings agencies.[2] In response, the major companies looked to lower costs, preserve capital and reduce leverage, with capital expenditure cut from an average of >10% of sales in 2007/08 to closer to 6% of sales in 2011.[3] In 2009, four of the largest global cement producers alone announced ~Euro2bn of planned cost saving initiatives.[4]

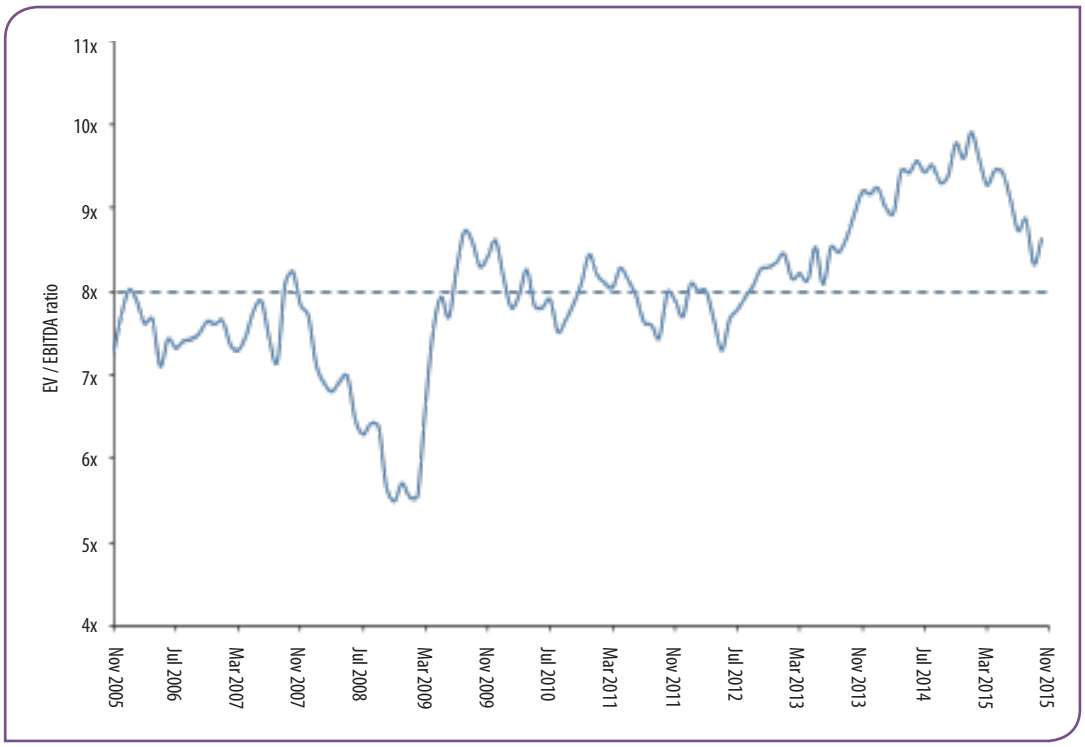
Whilst the period between 2008 and 2014 was not without material acquisitions, the focus on deleveraging and operational efficiency combined with a difficult operating environment meant deal activity was relatively muted until 2014. This changed in April 2014 with the announcement of the planned merger between Lafarge and Holcim, an event that, at least in part, helps to explain some of the surge in M&A activity that has since followed.

Indeed, there have been a number of drivers of the recent wave of sector consolidation in the global cement sector. Firstly, the outlook for the sector has improved in developed markets, led by the US but with the outlook for demand growth also stabilising in Western Europe, offering potential acquirers the chance to buy assets at an attractive time in the cycle at valuations that did and do not look overly stretched, against an improving outlook. This can be seen in Figure 2, which shows Enterprise Value (EV) as a multiple of the next full year's EBITDA over the last 10 years.

Whilst the outlook for certain key emerging markets has deteriorated more recently, the long-term trend in volume growth remains positive and M&A has allowed groups to put together businesses with strong geographical fits, offering exposure to fast-growing emerging markets and the ability to balance regional cycles across a portfolio of geographic exposure. Secondly, whilst cost-cutting and other self-help measures are ongoing, the sector has already delivered a material quantum of savings, with each incremental Euro saved harder to achieve. Indeed, those groups who have had the strongest recent track record of delivering efficiency programmes are well placed to use their know-how to deliver savings in target companies. Indeed, consolidation offers cement companies the ability to generate material synergies and, ultimately, rationalise capacity in oversupplied markets.



Right - Figure 1: Announced M&A in the global cement sector by value (Billion Euro).
Source: Dealogic.



Left - Figure 2: EV/EBITDA ratio for LafargeHolcim (Holcim), HeidelbergCement, Italcementi, Buzzi, Titan, Vicat, Cemex and Cementir, November 2005 to November 2015. **Source:** FactSet, RBS analysis.

Third, a number of the largest players in the global cement industry have managed to reduce leverage since the bottom of the financial crisis, giving them increased balance sheet flexibility to take on debt to finance acquisitions. Indeed, both banks and the debt capital markets have been supportive of increased borrowing by major players to fund or part fund acquisitive growth, with the low interest rate environment allowing groups to fund at historically low costs, as can be seen in Figure 3.

Finally, as noted above, M&A in the sector itself has led to further deal activity, both as consolidation and increasingly large and assertive emerging markets players puts pressure on competitors to respond, and, as recent combinations, lead to anti-trust driven disposals. This was the case with CRH's acquisition of a portfolio of assets sold by LafargeHolcim.

Prospects for 2016

Whether for dynamic portfolio management or anti-trust reasons, 2016 should see a number of follow-on opportunities from recent combinations. For instance, LafargeHolcim has recently announced it will target ~Euro3.2bn of disposals in 2016 and HeidelbergCement has stated its confidence in achieving ~Euro1bn from disposals as a result of the proposed acquisition of Italcementi.

There are a number of reasons to believe that we will continue to see M&A activity and consolidation in the global cement sector over the course of 2016, if not perhaps on the scale of the likes of Holcim's merger with Lafarge. The sector is still fragmented: Outside China, the top four players account for ~32% of market capacity with only one (LafargeHolcim) accounting for over 10% today. This is unusual for a mature industry and, while the sector is to a large extent local, it does offer economies of scale.

2016 should see a number of follow-on opportunities from recent combinations...

M&A continues to offer players the ability to enter new markets and to gain share in existing ones where raw materials are scarce, without risking additional supply and without the cost and permitting and environmental challenges associated with new cement plants. In developed markets, the outlook remains supportive, albeit with some variance in different geographies. The US is expected to continue to grow at a high single digit CAGR over the next two years.

Below: National Cement Dubai, UAE, with Dubai skyline in the distance. **Source:** Kritish Shetty, National Cement Company, entrant to the *Global Cement Photography Competition 2014*.

Right - Figure 3: Proxy cost of bond financing for European investment grade corporates (average of seven and 10 years). **Source:** iBoxx, RBS analysis

Western Europe is returning to growth, albeit at a much slower pace and with stronger markets such as the UK and Germany offset by weaker markets such as France. Good growth in Iberia is still not expected to solve very low capacity utilisation rates in the near to medium term. While company valuations have improved, they are arguably still at historically reasonable through-the-cycle levels and, where required, the debt financing markets continue to be supportive with the interest rate outlook relatively benign, especially in Europe.

Potential dampeners to M&A

However, further material M&A is not without its challenges. Having promised significant synergies on announcing major recent deals, the likes of Lafarge-Holcim, CRH and HeidelbergCement/Italcementi (once closed) will need to deliver on their plans, while ensuring a smooth business and cultural integration. They will have to do this against a backdrop of increasingly difficult key emerging markets, which have been a major driver of recent operating performance for some of the global players.

Right: A loader makes its way up the face of the quarry at the Norcem Kjøpsvik plan in Norway.

Emerging markets now account for around ~90% of global cement demand, with China alone accounting for around ~60% of global demand. A hard landing in the construction sector would have a meaningful impact on the global outlook. Ongoing geopolitical risk may add to uncertainty in key growth markets and regulators and competition authorities will continue to pay close scrutiny to a sector that has had a mixed track record.

Nevertheless, it seems we are still in a consolidating phase for the cement sector. Successful emerging markets' businesses are consolidating and outgrowing their domestic markets and are likely to continue to look for expansion overseas. Meanwhile, developed market players that haven't yet participated in the M&A wave may view themselves as sub-scale in the new landscape and look to combine. With material anticipated disposal plans from a number of majors, they will have plenty of opportunity to do so.

Lessons from the global financial crisis (which is still being felt) have been heeded with recent deals either being structured as share transactions, asset swaps or, if debt financed, on a comparatively conservative basis. After a busy two years in global cement M&A, it would seem activity is unlikely to slow down any time soon.

Sources and notes

1. Cemex, Italcementi, HeidelbergCement, Holcim, Lafarge. **Source:** Factset

2. Standard & Poor's, Moody's and Fitch

3. Unweighted average across Lafarge, Holcim, HeidelbergCement and Cemex

4. The same producers as listed under note 3.

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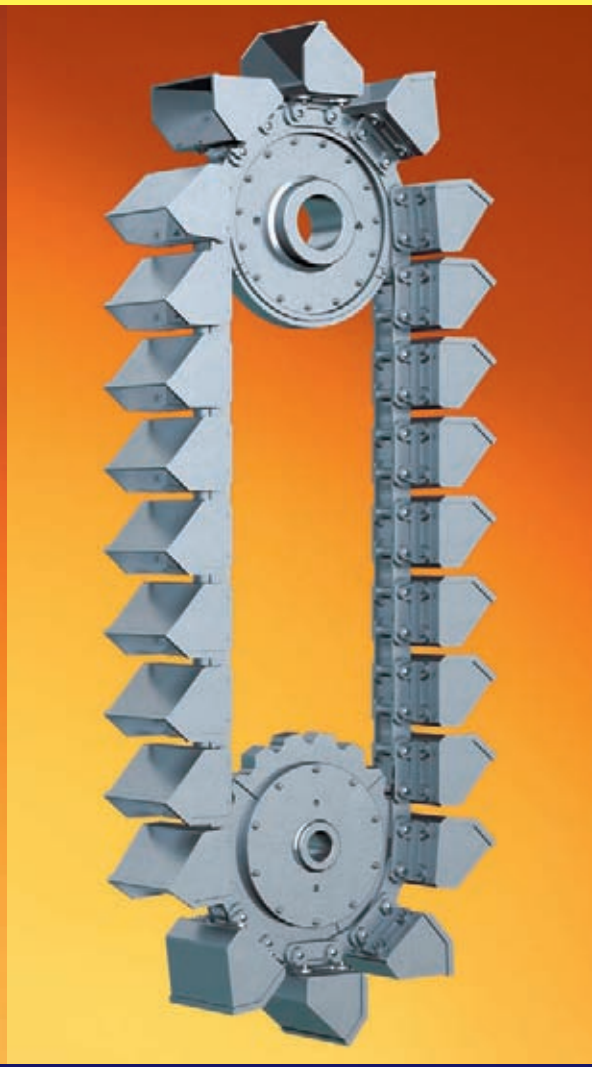

HEKO Ketten GmbH

Eisenbahnstraße 2 | 58739 Wickede (Ruhr), Germany | Telephone +49(0)2377-9180-0 | Fax +49(0)2377-1028 | E-Mail: info@HEKO.com

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Global Cement staff

Visiting Venti Oelde

Global Cement's Paul Brown visited Ventilatorenfabrik Oelde's fan manufacturing facility in Oelde, Germany, in late 2015. Here the company presents some of its recent projects, which are in the process of being completed for clients in Africa, Saudi Arabia, Colombia, Vietnam and Turkey, among others.

Process fans in the cement industry are exposed to extremely harsh conditions resulting in massive wear. Venti Oelde possesses decades of experience in the design and construction of industrial fans and is a technological leader in wear protection. The company constantly promotes research and development.

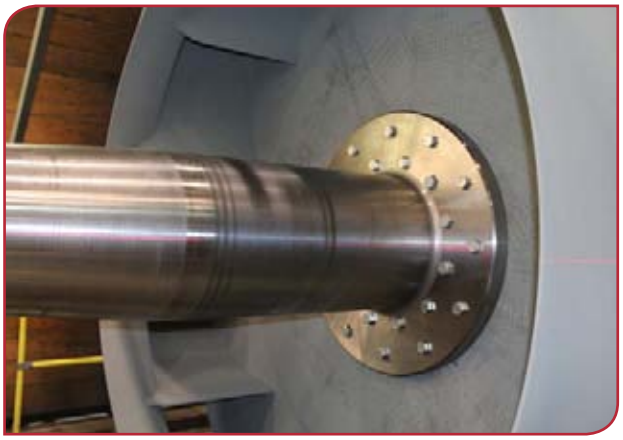
Wear has increased considerably over recent years in the cement industry. Principal reasons are process optimisation and newer, finer types of cement. The increased use of secondary fuels can also make dust more abrasive.

Abrasion can lead to a decrease in performance or produce imbalance, preventing continued operation. Otherwise, irreversible subsequent damage may be the result. Even if a plant is shut down for a short time, the operator will suffer considerable losses.

Left: Rotor for an exhaust air fan for an African cement company being specially despatched by Antonov. **Flow volume:** 1,600,000m^3/hr. **Impeller diameter:** 3.46m. **Rotor weight:** 26,000kg.

Far left: Peter Herrmann (General Manager Fans Division) and Inge Teich (Marketing) proudly stand next to a rotor for a filter fan for a customer in Colombia. **Flow volume:** 780,000m^3/hr. **Drive power:** 2400kW.

Left: Rotor for kiln fan being packed for shipment by sea to Vietnam. **Impeller diameter:** 3.9m.



Far left: Wear-protected rotor for mill fan in Turkey, on the balancing machine. **Flow volume:** 905,000m^3/hr. **Drive power:** 4100kW.

Left: Kiln fan impeller with special wear protection for a 10,000t/day cement production line in Saudi Arabia **Impeller diameter:** 3.4m. **Drive power:** 2800kW.

Contents

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Peter Edwards, Global Cement Magazine

Excerpt: Global per-capita capacity trends

Different countries have vastly different sized cement industries. This is a result of differing natural resources, levels of economic and industrial development and government policy. Another key factor, less often considered, is a country's population. Along with production levels, the population has frequently been used to calculate *per-capita* cement consumption. As production figures for some countries can be out of date, we have instead used the *capacity* information and the populations for countries with integrated cement production facilities to find *per-capita capacity* values.

While this cannot be a reflection of actual per-capita consumption, the low prevalence of international trade in the sector allows us to calculate values for all clinker-producing countries. This throws up some unusual patterns, which are summarised below and expanded upon in the *Global Cement Top 100 Report 2016,* which is available from 4 January 2016. The full report contains capacity/population rankings for all of the world's 141 clinker-producing nations.

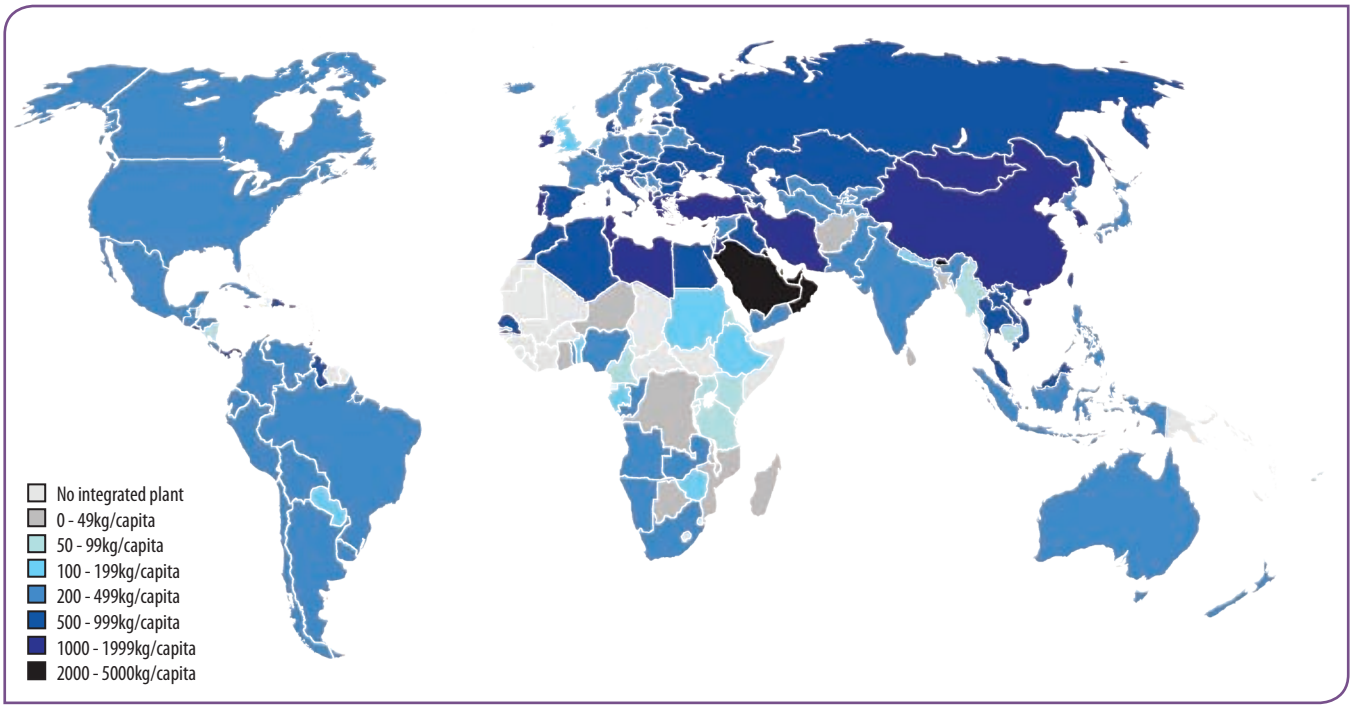
Capacity / Population overview

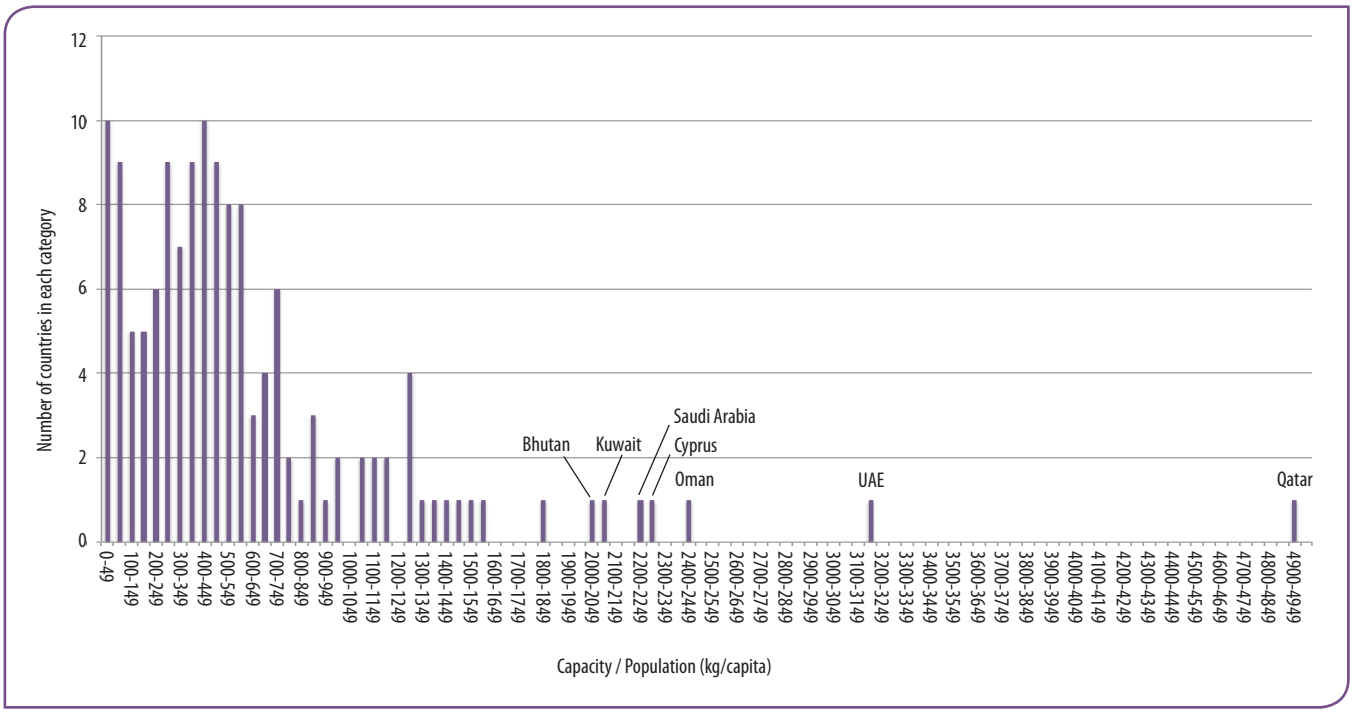
Figure 1 is a global map of the integrated cement capacity of 141 countries and territories (according to the *Global Cement Directory 2016*) divided by their populations. The first thing that is striking is that dividing the capacities by the populations has the effect of 'smoothing' of the map relative to more commonly seen maps of absolute capacities.

Taking all 141 countries, the mean capacity/population ratio is around 620kg/capita/yr, which is around the level traditionally associated with rapid economic growth. Excluding China, where reliable information is unavailable, the remaining 140 countries have a mean consumption of 615kg/capita/yr. The median value for the 141 countries is 456kg/capita/yr. Without China this falls to 446kg/capita/yr. The mode, both for the 141 countries and without China is 282kg/capita/yr.

Going from the lowest to the highest values, 10 countries have capacity/population ratios below 50kg/capita/yr. Another nine have capacity/population ratios of 50-100kg/capita/yr. Up to 200kg/capita/yr there are another 10 countries. A total of 49 countries have capacity/population ratios of between

Below - Figure 1: Cement capacity divided by population for all countries that have integrated cement production capacity. **Source:** *The Global Cement Directory 2016.*





Above - Figure 2: Distribution of capacity/population for 141 cement-producing nations. **Source:** *The Global Cement Directory 2016.*

200kg/capita/yr and 500kg/capita/yr, and another 37 have ratios of 500-1000kg/capita/yr. There are a futher 24 countries that have ratios of above 1000kg/capita/yr, with seven of these above 2000kg/capita/yr. The highest capacity/population ratio is Qatar, which has an incredible 4905kg/capita/yr of integrated cement capacity.

The above infomation is summarised in Figure 2, which breaks the distribution down into 50kg/capita/yr groups. This visually shows a large number of countries in the region around 200-500kg/capita/yr, a tailing off above 600kg/capita/yr and increasingly rare outliers up to 5000kg/capita/yr. Countries over 2000kg/capita/yr have been labelled and are described in greater detail below, along with the rest of the 'Top 10.'

Rank	Country	Capacity (Mt/yr)	Capacity Rank	Population (million)	kg/capita/yr
1	Qatar	10.3	46	2.1	**4905**
2	UAE	29.5	21	9.3	**3172**
3	Oman	8.8	49	3.6	**2447**
4	Cyprus	2.5	95	1.1	**2273**
5	Saudi Arabia	64.2	13	28.8	**2230**
6	Kuwait	7.0	54	3.4	**2059**
7	Bhutan	1.5	111	0.75	**2000**
8	Luxembourg	1.0	119	0.54	**1852**
9	Libya	9.7	47	6.2	**1565**
10	Albania	4.3	71	2.8	**1536**
11	Mongolia	4.1	72	2.8	**1480**
12	Jordan	9.4	48	6.5	**1449**
13	Ireland	6.3	57	4.6	**1370**
14	Lebanon	6.0f	61	4.5	**1322**
15	Greece	14.3	34	11	**1298**
16	Jamaica	3.5	79	2.7	**1296**
17	South Korea	64.5	12	50.2	**1284**
18	Turkey	94.7	5	74.9	**1264**
19	Taiwan	28.0	23	23.5	**1193**
20	Tunisia	12.9	38	10.9	**1184**

Left - Table 2: Cement producing nations, ranked by cement capacity/population, positions 1-20. Rankings 21-141 available in the full version of the *Global Cement Top 100 Report 2016*. **Source:** *The Global Cement Directory 2016.*

Capacity / Population - Top 10

Table 1 shows the top 20 countries ranked by their installed integrated cement capacities divided by their populations. Also shown is the 'capacity rank,' according to the *Global Cement Directory 2016*. The lower the capacity rank, the higher the integrated cement capacity. The rankings and capacity/population values for the remaining 121 countries that have integrated production facilities can be found in the full version of the *Global Cement Top 100 Report 2016*. The top 10 are discussed here.

1. Qatar: Top of the pile with an incredible capacity/population value of 4905kg/capita/yr is Qatar, the archetypal oil-rich nation that also has the highest GDP/capita in the world. It has tremendous wealth combined with a stable political outlook, which has enabled and continues to enable massive investment in a range of construction projects. According to Project Qatar, US$350bn of

projects are currently in the planning or construction phase. These include lavish preparations for the 2022 FIFA World Cup and the Qatar National Vision 2030 project, as well as metro systems, highway networks, bridges and a raft of hotels, leisure and sports facilities, shopping malls and residential projects.

The Managing Director of Al Khalij Cement Company, Faisel bin Abdullah al-Mana, estimates that the country requires 20,000-22,000t/day of cement, the equivalent of around 7.3-8Mt/yr. This is below Qatar's headline capacity of around 10.3Mt/yr, indicating around 75% capacity utilisation. Al-Mana's estimate equates to a slightly less extreme consumption per-capita value in the region of 3476-3824kg/capita/yr.

2. UAE: The UAE is another Middle Eastern state that has a vast oil income and has become accustomed to spending it. Its 29.5Mt/yr of cement capacity and population of 9.3m give a very high capacity/population value of 3172kg/capita/yr.

However, as is the case with Qatar, the UAE's consumption is likely to be substantially less than this value due to the fact that the Emirates are significant exporters of cement, by both road to neighbouring Oman and Saudi Arabia and to locations further afield by sea. However, recent reports suggest that the country will reduce exports as domestic consumption ramps up ahead of US$700bn of government investment. This includes preparations for the Dubai EXPO 2020, UAE National Vision 2021 and major investments to be directed at transport and power infrastructure projects, all of which require cement. Six projects - Dubai and Abu Dhabi metro line extentions, an Emirates Roads Master Plan, new airport terminals at Abu Dhabi and Dubai and a country-wide rail network - will account for US$55bn of investment alone. Cement sales are expected to rise by 7.6% year-on-year in the period to 2019.

3. Oman: The country is only 49th in the list of the largest cement producing nations, but Oman's small population means that it has the capacity to produce nearly 2500kg/capita/yr from just three production sites. As with its northern neighbour, the country is a stable oil-rich Arab economy that is a strong investor in public and private works.

Given that Oman has taken to accepting large volumes of cement from the UAE, the country's consumption actually exceeds its capacity/population value. According to Oman Cement's Hilal Saif Al-Dhamri however, "2016 will be a challenge because the government is going to reduce the number of projects." This seems to suggest that any reduction in imports from the UAE may in fact be welcomed by local producers, despite them previously being happy to accommodate UAE-made cement in the market.

4. Cyprus: The divided island nation of Cyprus is a surprise entrant in the top 10 of countries that have the highest cement capacity per capita ratios. The country has just one active integrated cement plant, which has a capacity of just 2.5Mt/yr. However, a population of just 1.1 million gives a capacity/population ratio of 2273kg/capita/yr. When one considers the fact that the unrecognised Turkish Republic of Northern Cyprus, which is supplied with cement by Turkey, is home to around 25% of the total population, the *de-facto* capacity/population value rises to over 3000kg/capita/yr.

Unlike the above three cases, Cyprus' high capacity/population value is due to a profound overcapacity. The rise of easy credit in the early 2000s gave rise to rapid investment in private works and tourist facilities, which broadly matched the level of cement that the country was able to produce. However, this building spree was brought to an abrupt end by the onset of the European financial crisis, which put paid to many developments, both private and public. In a particularly damaging move, the government enacted a 'haircut' tax on all business and private bank accounts over Euro100,000 in order to raise funds to repay its debts. This spelled instant ruin for many domestic construction firms, forced foreign investors to move out and left the country littered with partially-constructed buildings.

At present Cyprus does not use anything like its cement capacity, with demand falling for the past five years. In 2014 consumption fell by 31.5% year-on-year to just 535,000t, the same level as in 1979. This is an apparent capacity utilisation rate of just over 20% and represents actual production per-capita in the region of 486kg/capita/yr. This is still fairly high in terms of the values seen in other EU member states.

5. Saudi Arabia: With the 13th-largest cement capacity in the world, Saudi Arabia has the largest capacity of those countries in this Top 10 list. It is the only country that features in the Top 20 of both ranks.

Saudi Arabia comfortably fits into the Top 10 in this list as another example of an oil-rich Arab nation that is undergoing a building boom. It has a cement capacity/population ratio of 2230kg/capita/yr. Saudi cement production reached 57Mt/yr in 2014, around 89% of the country's 64.2Mt/yr of installed integrated cement capacity. Sales were up by 3% year-on-year.

However, at the close of 2014, production surpluses (from integrated and grinding plants) reached 22Mt, enough for five months of supply. Despite an up-tick in sales in the fourth quarter of 2014, some Saudi firms requested a temporary suspension of the country's export ban in March 2015 in order to export 6Mt of cement to Egypt.

In the period to 2019, analyst firm TechNavio expects the cement market in Saudi Arabia to grow at a

compound annual growth rate of 5.14%. Taking the 2014 value above, this would mean sales of around 73.2Mt in 2019. This gives an apparent consumption of 2303kg/capita/yr, assuming population growth of 2%/yr over the same period.

As this level of production is more than the country can currently produce, several Saudi cement firms are currently contracting suppliers for new cement lines. Most notably, Yamama Cement has just awarded thyssenkrupp its largest ever order for a cement plant. The contract is for two entire lines, with a total capacity of 20,000t/day (~6.6Mt/yr). This project alone will raise the country's integrated cement capacity to near the level forecast for 2019 by TechNavio and will be complemented by other projects and additional capacity from existing grinding plants.

Saudi cement firms will welcome this news, as it comes on the back of a 6% improvement in their collective net profit in 2014. The net profits of seven companies were up, the net profits of six were down and only one company registered a loss.

6. Kuwait: To the north of Saudi Arabia lies Kuwait, the country that has the sixth-largest capacity/population ratio for its integrated cement industry. Yet another example of a small and stable oil-rich state, Kuwait has 2059kg/yr of cement capacity for each inhabitant. It has 7Mt/yr of integrated cement production capacity but a population of only 3.4 million.

Like Oman, Saudi Arabia, the UAE and Qatar, Kuwait is another country investing very strongly in infrastructure and housing. It reportedly has US$188bn-worth of projects undergoing planning or construction, including a US$7bn metro project, a new US$3.3bn airport, US$6.2bn of highway projects a US$15bn oil refinery and the flagship US$2.6bn Subiya Causeway project.

7. Bhutan: Perhaps even more surprising than Cyprus, Bhutan is number seven in the list of cement producing nations by integrated capacity/population. Its 2000kg/capita/yr ratio is based on a capacity of 1.5Mty/r and a population of 0.75 million. The first of the country's two cement producers, Penden Cement Authority, started production in 1974 and the second, Dungsam Cement, was established in 2000. This means that the apparent capacity/population ratio was even higher in the past.

Bhutan's ratio is much higher than that of India, Nepal, Bangladesh and even China. It is no surprise therefore, that both producers export cement, almost exclusively to India. Penden exports to Assam, West Bengal and Sikkim in India and Dungsam exports to the region surrounding Guwahati, Assam.

8. Luxembourg: With a population of just over half a million and a single cement plant with a capacity of 1Mt/yr, Luxembourg has a capacity/population ratio of 1852kg/capita/yr. Like Bhutan (at number 7) Luxembourg is a small, landlocked nation that is located next to neighbours with much larger economies and cement industries. At 119th-largest in the world, the country has the smallest capacity cement industry of the countries listed here.

The Cimelux plant, part of Italy's Buzzi Unicem, is not strictly an integrated plant, as it produces only clinker. This is ground at Cimelux's 1.4Mt/yr grinding plant in Luxembourg and is also taken to neighbouring France, Germany and Belgium as part of the wider Buzzi Unicem / Dyckerhoff distribution network. It is also possible that clinker from those countries is ground in Luxembourg.

Unlike some of the other countries above, Luxembourg is clearly not able to consume the apparent level of cement that it can produce. The country is predominantly rural and has a high GDP/capita, which (at least in Europe) is typically indicative of low cement consumption. One could draw a Luxembourg size area around many European cement plants and conclude that the area consumes >2000kg/capita/yr of cement. Of course, in reality, the material will be travelling much further afield. The recent economic slump in Europe also makes it likely that clinker and cement production at Cimelux will be lower than the headline capacity, lowering the apparent cement capacity/population ratio.

9. Libya: Libya has a large cement industry relative to its population, with 1565kg/capita/yr. It has 9.7Mt/yr of cement capacity and a population of 6.2 million. While it is similar to many in this list in that it has large reserves of oil, Libya is not politically stable. It is currently experiencing a complex and damaging civil war that has ultimately precipitated the removal and execution of former leader Muammar Gaddafi in 2011.

Libya's eight cement plants are operated by Ahlia Cement Company, Libyan Cement Company and Arab Union Contracting Company. Much of the

infrastructure is old. Despite this, even in the relative boom of the pre-revolution era, the plants were only running at around 50% of installed capacity. In 2012, the last year for which the AUCBM website gives values, Libya produced just 2Mt of cement, well behind its 9.7Mt/yr capacity. This gives an approximate consumption per capita value for that year of just 322kg/capita/yr, which is likely to have fallen even further since.

10. Albania: Albania has 4.3Mt/yr of integrated cement capacity and a population of around 2.8 million, giving a ratio of 1536kg/capita/yr. It is the only former Soviet satellite state in the top 10 countries by capacity/population. As in many similar cases, Albania's cement industry was centrally-planned and did not necessarily reflect market requirements upon the end of its socialist regime in 1992. Indeed, in 2012, the latest year for which the USGS has data, the country produced just 2Mt of cement, giving an apparent consumption of 714kg/capita/yr in that year, around half of the capacity/population value.

Where are the top 10 cement producers?

Below, we examine the capacity/population ratios of the 10 countries with the largest cement capacities as presented in the *Global Cement Directory 2016*. None is in the top 10 countries ranked by capacity/population. They are described below in the order of highest to lowest capacity, but are numbered according to their position in the list of capacity/population as shown in the full version of the *Global Cement Top 100 Report 2016*, which also has more detail on each of the countries below.

22. China: Despite having the largest cement capacity in the world, China only ranks at number 22 on the list of countries by capacity/population. However, it still has a capacity/population of over 1100kg/capita/yr.

China's true position in the list is hard to pin down, due to the inherent difficulty of obtaining capacity data from Chinese sources, the sheer size of the industry and the rapid pace of change. If one takes Chinese *production* values for 2013 at face value, which state cement production of 2.4Bnt, China had an apparent *consumption* of around 1769kg/capita/yr. If this were to be verified, it would shift China up to 10th place in the capacity/population rankings.

108. India: Second in terms of integrated cement capacity, India has the lowest capacity/population ratio of any country in the top 10 list by capacity. Ranked in position 108, the country has a capacity/population of just 224kg/capita/yr.

India is often (and rightly) accused of running with an overcapacity in its cement sector. However, it actually appears to have significant room for *expansion* if it were able to match the capacity/population ratios of some other developing countries. To date, this rise has been hampered by the failure of consecutive governments to deliver infrastructure projects.

85. USA: At 364kg/capita/yr, the United States has a relatively low capacity/production ratio that is consistent with a developed nation. One of the few 'traditional' cement markets that performed strongly in 2015, the Portland Cement Association forecasts that production will continue to grow by 5% in 2016 and by 5.7% in 2017, following a rise of 3.5% in 2015.

At present the country's domestic capacity is sufficient to cover such rises. In the longer term, however, the PCA anticipates cement growth to be strong after 2015 and 2016. It anticipates around 155-160Mt of cement consumption in 2035 based on GDP growth of 2.2%/yr, an extra 60 million inhabitants and higher infrastructure spending.

33. Russia: At number four in the global cement capacity list, Russia's 108Mt/yr of integrated capacity and 143.5 million-strong population gives it a capacity/population ratio of 753kg/capita/yr. This is consistent with rapid economic development, which had been a theme in the Russian economy until a three-pronged onslaught from the economic downturn, falling oil prices and sanctions / currency devaluation following its unilateral annexation of the Crimean Peninsula from Ukraine in 2014.

At present, Russia's cement production level is falling, belying its high capacity/population ratio. Russia's cement consumption may have even fallen by 5-10% in 2015, according to Eurocement.

18. Turkey: Turkey has the highest capacity/population ratio among the top 10 cement producers ranked by capacity. It has an integrated cement capacity of nearly 95Mt/yr and a population of around 75 million, giving a capacity/population ratio of 1264kg/capita/yr.

In the first nine months of 2015, Turkey made 52.1Mt of cement, a year-on-year fall of 4.5% compared to the same period of 2014, when it made 54.6Mt. If this trend continued for the rest of 2015, the year will have seen cement production of approximately 68.7Mt. Assuming exports at 11% of production (as in 2014) this leaves Turkey with apparent consumption/capita of 916kg/capita/yr, well below its value in the capacity/population rankings.

23. Iran: With over 1000kg/capita/yr, Iran has a very large cement industry relative to its population, although it likely produces at less than full capacity. Indeed

it stopped clinker production altogether in January 2015 after inventories filled up. Like Turkey, it is a prominent cement exporter, However, it is possible that Iran will export less cement in the coming years due to greater domestic demand, if US-led sanctions are lifted as part of negotiations over the country's nuclear programme.

28. Vietnam: Exporting almost as much cement as Turkey and Iran combined, Vietnam's centrally-led cement industry makes far too much cement than its population needs at a capacity/population ratio of 877kg/capita/yr. The government estimates that Vietnam's cement and clinker sales in 2015 will have reached 71.5-72Mt in 2015, fulfilling the year's 'target.' Of this, clinker exports comprise 16.5Mt. If we take the remaining 55Mt of domestic sales, Vietnam had apparent consumption of 710kg/capita/yr in 2015.

82. Brazil: Brazil's cement industry has stagnated in 2014 and 2015, with cement sales likely to be only 60Mt/yr from a national capacity of nearly 80Mt/yr. Several of the country's big players reported poor financial results for the first nine months of 2015, with Votorantim making a loss and Camargo Corrêa reporting that it might sell major Brazilian assets.

103. Indonesia: Indonesia is at position 103 in the capacity/population list. Its lowly position by this measure is down to its very large population of nearly 250 million, compared to its otherwise large 68.3Mt/yr of cement capacity. This leaves a capacity/population ratio of 273kg/capita/yr, less even than the global median value of 282kg/capita/yr.

This shows that Indonesia, perhaps even more so than India, has incredible potential for development of its cement sector in the coming years. Indeed, in the past six months there have been announcements from PT Semen Indonesia targeting 30Mt of sales in 2016 and two new cement plant projects in Kupang and Aceh. Meanwhile, Holcim Indonesia has launched a 3.4Mt/yr plant in Tuban, East Java.

However, and again, as in India, infrastructure development is still key to using increased levels of cement and other construction materials. This is still lacking across much of the country. Cement sales were down by 4.2% year-on-year in the first half. The government has reduced electricity and gas subsidies to cement plants over the course of 2015, squeezing margins. Imports are also an increasing concern, particularly from Vietnam and Thailand. Producers will hope that government spending can accelerate to match their capacity.

31. Egypt: Egypt has the largest cement capacity in Africa, with 67.3Mt/yr of capacity. It also has the highest cement capacity/population ratio on the continent at 820kg/capita/yr. With current expansion projects and new plants, the country's capacity will swell to more than 75Mt/yr in the coming years. This would give a capacity/population of 913kg/capita/yr.

While this indicates anticipation for increased demand, the industry remains besieged by the low availability of its traditional fuel gas, with coal and alternative fuels becoming increasingly important. However, processing and availability hurdles remain. Increased fuel availability and improved reliability of supply are important factors that will help the sector realise its full production capacity.

Report: The top 100 cement producers and global per capita capacity trends

This article is an excerpt from *'The top 100 global cement companies in 2015 and global per capita capacity trends.'* The report is for purchase for £100GBP on 4 January 2016 via the following link:

http://www.globalcement.com/reports

The full report includes:

- Listing of the ***Top 100*** global cement producers, according to the *Global Cement Directory 2016*;
- Listing of the ***Top 68*** global cement producers, according to producer websites and research;
- Analysis of the financial data and key events of the ***Top 10*** global cement producers in 2015;
- Analysis of global integrated cement production capacity, as a function of population size.

S M Imran, Thatta Cement Company Ltd

Thatta Cement: A journey towards technological advancement

The struggling economy of Pakistan, triggered by the issue of terrorism, has compromised the execution of many essential development projects over the past two decades. The situation has hampered the use of installed cement production capacity in the country. Out of Pakistan's 45.7Mt/yr of installed cement capacity, utilisation is around just 60%. This, coupled to high energy costs, has become a big challenge for those cement plants that lack modern technologies. Here, S M Imran explains how Thatta Cement has recently undergone a major upgrade to help it match Pakistan's current and future market conditions.

Thatta Cement Company Limited (TCCL) was established in 1982. Its integrated plant, which has a clinker capacity of 1000t/day, was designed and supplied by Mitsubishi Heavy Industries of Japan. To help it achieve higher production efficiency, the plant was upgraded in 2005 and its capacity was increased to 1500t/day of clinker. At the same time, the plant was converted from using just fuel oil to a multi-fuel firing system that incorporates coal and gas as well as fuel oil. At this stage, a state-of-the-art computerised process control system was also installed which was aligned with the latest developments in the cement industry.

The improvements mentioned above had a positive impact on plant efficiency. However, the subsequent challenge relating to abnormal increases in the price of coal adversely hit cement manufacturers all over the world. As a result, the industry started to look at alternative fuels. Unfortunately the pyro-process system of TCCL did not have a precalciner, which limited the use of alternate fuels. At the same time, TCCL had noticed that the increase in production had increased the load on its clinker cooler. Therefore TCCL planned to adopt energy-efficient technology with pre-calcination in order to achieve a sustained competitive position in the market.

Planning a major project

In 2015 TCCL decided to embark on a major upgrade project to enhance efficiency and prepare it for future trading conditions. At the planning stage it was noted that the existing three-base kiln, which was 4m in diameter by 60m in length, would be able to support clinker production at up to 3000t/day. However, much of the upstream equipment, particularly the raw mill, was incapable of this. Many other auxiliaries also had to be upgraded to achieve production at 3000t/day, which would require sizeable investment.

However, such a large investment was not viable on account of Pakistan's overcapacity situation. Hence it was decided to undertake upgrades in stages. This would involve only improvements to fuel efficiency and the development of TCCL's alternative fuel capability in the first stage. Capacity enhancement work would be kept until the market improves.

In line with this plan, various concepts were evaluated. It was decided that the first phase would focus on improving the specific heat consumption and developing TCCL's alternative fuel capability, alongside a marginal capacity increase to 1700t/day of clinker.

The upgrade of the pyro-process line comprised the following major activities:

- Addition of precalciner and tertiary air duct, with various accessories;
- Replacement of cyclones at stages one and five;
- Replacement of feed pipe for stage four cyclone;
- Replacement of the kiln riser;
- Replacement of the preheater fan;
- Modification of the gas conditioning tower;
- Replacement of the kiln outlet seal;
- Replacement of the clinker cooler, with accessories;

Right - Figure 1: The TCCL plant in Sindh, Pakistan.

Left - Figure 2: The tertiary air duct and pre-calciner are new additions to the pyroprocessing system.

- Installation of an electrostatic precipitator for cooler dedusting;
- Addition of a coal dosing system for precalciner;
- Modification of the clinker transport system.

The contract for the process design was awarded to FLSmidth of Denmark. The following are the salient features of the upgraded process:

Pre-calciner

A pre-calciner with in-line calciner (4.8m x 30m) has been added to the existing system. The diameter of the pre-calciner will be sufficient for 3000t/day capacity and only the height will have to be increased as and when TCCL decides to increase production. The future load has been taken into consideration in the design of the civil foundation and the supporting steel structure.

Tertiary air duct

A tertiary air duct, 2000mm in diameter, was appropriate for the present capacity. However, in consideration of future production at 3000t/day, a 2240mm diameter duct has been installed and an additional layer of 70mm refractory has been installed. This will be removed when the capacity is taken to 3000t/day.

Preheater

Under the upgrade programme, the top and bottom cyclones have been replaced. Other cyclones have been retained as shown in Table 1.

Another string of cyclones will be required to augment the capacity. This has also been provided for in the new layout.

ID fan

A kiln ID fan, a shrouded impeller with backward curved blades and a capacity of 309,960Nm^3/hr has been installed to handle the kiln/preheater exhaust gases.

Kiln riser

A new kiln riser, which has dimensions of 1900mm x 1900mm, has been accommodated.

Clinker cooler

An FLSmidth Cross Bar Cooler (10 x 26 with ABC inlet and HRB MF308 at the outlet) has replaced the old clinker cooler. For de-dusting of the cooler exhaust air, which is produced at a rate of 188,280Nm^3/hr, a new electrostatic precipitator has been installed to ensure that dust emissions are kept at or below 30mg/Nm^3. To accommodate the new clinker cooler, minor re-positioning of the existing clinker conveyor has also been carried out.

Left - Figure 3: An FLSmidth Cross Bar Cooler has replaced the old generation cooler.

Upgrade of distributed control system

A new redundant plant server, engineering server, MIS server for long term archive of process data and operator station consoles have been installed, along with an upgrade of the Siemens WinCC and CEMAT software from Version 6.0 to Version 8.1.

Installation of rotary packing machine

Two stationary packers, each with a capacity of 60t/hr, were installed with the original plant. A new 120t/hr Giromat Evo8 eight spout rotary packing machine has now been installed, along with a check weigher, photoelectric cell for bag counting and two truck loaders. This new set up has improved the accuracy in the weight of filled bags and improved TCCL's loading efficiency.

The upgrade was completed in July 2015, with production starting on 13 July 2015.

Stage (top to bottom)	Pre-upgrade		Post-upgrade	
	Strings	Cyclone Ø (mm)	Strings	Cylone Ø (mm)
1	2	4200	2	3500
2	2	4610	2	4610
3	2	4310	2	4310
4	1	5460	1	5460
5	2	4310	2	3500

Left: Table 1.

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The Energy Union and other CO_2 emissions reports...

Koen Coppenholle Chief Executive of CEMBUREAU, the European Cement Association

On 12 November 2015, the European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP) published a report entitled *"CCS for industry: Lowest-cost route to decarbonising Europe"*. The report focuses on the Carbon Capture and Storage (CCS) deployment in three industries: cement, refineries and steel. It highlights the crucial role of CCS for industries in achieving their emissions reduction target and attaining deep decarbonisation. According to the report, Europe has sufficient options for storage given the large geological formations identified. However, insufficient investment and incentives for industries will delay CCS deployment to 2040. In terms of the cement industry, the report highlights the following options to reduce CO_2:

- Increasing energy-efficiency mostly by changing to more energy-efficient dry kilns and using more modern grinding equipment;
- Using alternative fuels instead of fossil fuels;
- Increasing clinker substitution in cement;
- Using CCS for both process emissions and fuel combustion emissions.

On 4 November 2015, the International Energy Agency (IEA) published a report entitled *'CO_2 Emissions from Fuel Combustion.'* This annual report covers more than 140 countries and provides a detailed analysis of CO_2 emissions from fuel combustion in 1971-2013. The new data shows that CO_2 emissions related to the energy sector, which is the source of nearly two-thirds of human-generated greenhouse gases, rose by 2.2% in 2013 to total 32.2Gt, compared with a 0.6% increase in 2012. Both years were below the average growth rate since 2000 of 2.5%. In absolute terms, global CO_2 emissions increased by 0.7Gt in 2013. Two-thirds of 2013 global emissions originated from just ten countries, with China (28%) and the United States (16%) combined accounting for 14.1Gt of CO_2.

On 18 November 2015, the European Commission (EC) published its first State of the Energy Union Report. The report looks at the progress in the implementation of the Energy Union Framework Strategy and highlights key initiatives planned for 2016.

According to the report, Europe is on track to meet the 2020 target in greenhouse gas emissions reduction. In 2020, European Union (EU) emissions are expected to be 24% below 1990 levels. As to renewable energy, some Member States may exceed their 2020 targets and must reassess the effectiveness of their tools and policies. Regarding energy-efficiency, in order to achieve the 2020 target, more efforts are needed from all Member States. As such, one of the 2016 initiatives is to align the Energy Efficiency Directive to at least 27% by 2030. As buildings represent about 40% of the total energy consumption, a proper evaluation of the Energy Performance of Buildings Directive as well as the launch of schemes to aggregate smaller energy-efficiency projects are also planned for 2016. In addition, the EC plans to prepare an integrated Energy Union strategy for research, innovation and competitiveness, which include increasing investments and initiatives that lead to more environmental and growth-friendly tax systems.

Later, on 26 November 2015, the Transport, Telecommunications and Energy Council adopted conclusions on the governance system of the Energy Union. According to the conclusions, the governance system will be established on the basis of the existing climate and energy policies and will play an essential role in achieving the Energy Union objectives. National Energy and Climate Plans, followed by Progress Reports and interactive Dialogue and Monitoring, are essential components of the system. The first plans will be prepared in 2018 and cover the period up to 2030. The Member States will submit their progress reports every two years with the first reports expected in 2020.

Switzerland: LafargeHolcim reports lower sales and operating EBITDA in 2015

In the first nine months of 2015, LafargeHolcim reported a fall in net sales, adjusted operating earnings before interest, taxes, depreciation and amortisation (EBITDA) and cement sales volumes. Net sales fell by 0.6% year-on-year on to Euro20.4bn at constant exchange rates and its adjusted operating (EBITDA) fell by 3.2% on a like-for-like basis to Euro4.02bn. In the third quarter of 2015, net sales fell by 1.1% on a like-for-life basis to Euro7.22bn and adjusted operating EBITDA was down by 8.9% to Euro1.51bn.

Sales volumes in all product lines declined slightly in the first nine months of 2015 due to lower than expected demand in markets impacted by an economic downturn, notably in Brazil and China, as well as a lack of infrastructure projects in India. In the third quarter of 2015, volume trends stabilised and countries like Argentina, Mexico, the Philippines and the UK continued to perform well. In the US, where the market recovery is ongoing, LafargeHolcim is increasing capacity by revamping and reopening plants. Consolidated cement volumes fell by 1.3% to 189Mt in the first nine months of 2015 as increased shipments in North America and Latin America were offset by declines in Europe and in China. Solid increases were reported in many markets, including in Egypt, Mexico, Philippines, Canada and the US. In the third quarter of 2015, cement volumes grew by 0.2% year-on-year to 65.3Mt.

"The first nine months of 2015 and, in particular, the third quarter of 2015, were impacted by the difficult economic context in some of our markets and considerable negative foreign exchange fluctuations," said Eric Olsen, CEO of LafargeHolcim. "In addition, the closing of the merger triggered one-off costs and organisational changes, the benefits of which will start coming through in 2016. We have also seen solid market trends that, combined with our commercial efforts, led to good performance in several countries. We have started laying foundations for the new company, on which we will build the future success of LafargeHolcim. I am confident in our ability to deliver the announced synergies and, thanks to disciplined capital allocation and superior execution, we will outperform our sector."

LafargeHolcim expects the contrasted evolution of the global economy to continue. A number of markets, including China, Brazil, France, India and Switzerland, will remain challenging, while others such as Argentina, Mexico, the Philippines, the UK and the US will likely see continuing positive trends. The group expects cement volumes to be higher in 2015 in all regions except Europe.

In other news, LafargeHolcim plans to raise Euro3.23bn in 2016 by selling cement assets. It has started discussions with interested parties, including private equity firms and industry rivals, with the proceeds set to be returned to shareholders, according to Olsen. "We have a position of number one, two or three in 70% of our markets," said Olsen. "Where we don't have that position, we are looking at divesting or swapping assets."

UK: Wastecycle expands site and staff

Wastecycle's recycling facility in Colwick, Nottinghamshire is now one of the largest in the UK after an expansion of the site. By acquiring seven acres of property, which the company previously leased, and buying an additional four acres, Wastecycle has extended its site to nearly 20 acres.

"This expansion provides us with the platform we need to reach the next stage of growth as a company," said Financial Director Nathan Cole. "Over the long term, we plan to use the additional land to expand our extensive recycling and resource management activities. This will help us broaden the services we offer while improving the quality and sustainability of the recycled products we manufacture."

The company has also completed an expansion of its main office to accommodate its growing workforce. After 20% growth in staff 2015, it now employs almost 300 people across its sites. "Ensuring our teams are comfortable in their working environments is very important to us because, not only does it increase productivity, but it also creates positive morale," said Cole. "Larger premises also provide the opportunity to open up new jobs, while improving the quality of service we can provide to customers."

Wastecycle separates 500,000t/yr of waste, including 18,000t/yr of recycling from 126,131 homes in the Nottingham City Council area. Some of the waste is turned into refuse-derived fuel (RDF) for use at cement plants. It also sorts through the rubbish of thousands of businesses across Nottinghamshire, runs a skip hire service and operates a wallboard recycling facility, which it developed with British Gypsum.

Wastecycle's turnover grew to Euro42.8m in 2014 from Euro35.9m in 2013. In 2015, it won four awards, including a Bronze Environmental Best Practice accolade at the Green Apple Awards in November 2015. It was recognised for the success of its wallboard recycling scheme, which has prevented more than 30,000t/yr of wallboard from reaching landfill.

Romania: Holcim to invest in road safety programme

Holcim Romania has initiated a Euro100,000 national road safety programme to increase awareness of appropriate driving behaviour.

The three-year programme consists of four simultaneous projects to reduce the number of casualties on the roads in Romania. The four projects are; an education programme in local communities; a programme to raise awareness and training the companies that provide transport services to Holcim Romania; a series of focus groups for professional drivers; an integrated journey management programme.

"Holcim Romania permanently seeks to improve and develop health and safety standards among its employees. One of our major concerns is to comply with the traffic rules and we wish to contribute with this road safety programme to decreasing the number of fatal and critical accidents. We can only do this by changing the drivers' mentality and raising their awareness with regard to the traffic risks," said François Petry, CEO of Holcim Romania.

Europe: WTW & MHC Group celebrates multiple milestone anniversaries

WTW & MHC Group celebrated two milestones in 2015. While MHC Engineering Fördertechnik GmbH in Cologne, Germany celebrated its 10th anniversary in November 2015, its sister company WTW Engineering MiUP Sp.z o.o in Wroclaw, Poland is looking back onto 20 years of history.

MHC Engineering Fördertechnik GmbH was founded in 2005. It acquired WTW Engineering MiUP Sp. Z.o.o. in Poland and WTW Americas Inc. in Canada. The three companies form WTW & MHC Group, a global supplier of silo and bunker discharge technology for bulk materials; complete turnkey systems or individual components for the reception, storage, discharge and transport of alternative fuels; materials handling including truck and trailer unloading, drag chain conveyors and belt conveyors; and laboratory testing of bulk materials.

Setting WTW & MHC Group apart as a bulk material handling expert is the material testing laboratory in Cologne. It enables the group to propose efficient bulk material handling solutions, giving it a technological advantage.

"WTW & MHC Group has developed into an accepted worldwide supplier of equipment in the alternative fuels handling industry," said Aaron Reid, one of the Managing Directors. "Cement and power plants supplementing their processes with alternative fuels have relied on us to provide systems for receiving, dosing, transporting, storing and discharging materials."

"We are committed to expanding our international presence and will continue to build strong relationships with our current and future clients through trust and cooperation. We will also build on our extensive knowledge of bulk material handling behaviour in order to provide our clients with the most efficient systems available," said the three Managing Directors, Marek Lewicki, Michael Gramling and Aaron Reid.

MHC Engineering Fördertechnik GmbH in Cologne, Germany.

Romania: HeidelbergCement Romania completes merger of building materials units

Germany's HeidelbergCement has completed the merger of the three companies it owns in Romania, namely Carpatcement, Carpat Beton and Carpat Agregate.

"The merger process takes into account our strategic position in relation to the economic environment, which is to overcome future challenges in order to use our resources to their full potential and to have a more efficient management of costs," said General Manager Florian Aldea.

HeidelbergCement is one of the leading manufacturers of cement, concrete and aggregates in Romania. It has three cement plants, in Tasca, Chiscadaga and in Fieni. It also owns 19 concrete plants, seven quarries and six gravel aggregates units.

UK: Thrislington lime plant closed

Lhoist plans to mothball its Thrislington lime plant in Durham. The decision was due to the recent closure of steel manufacturing facilities in the UK, to which the Thrislington plant supplied the vast majority of its dolomitic lime. "Unfortunately demand for dolomitic lime from our Thrislington plant has drastically reduced, since the closure of steel manufacturing plants in this region," said Cedric de Vicq, Managing Director of Lhoist UK. "We are looking at opportunities to retain staff where possible."

UK: Students visit Tarmac cement plant

Training Manager John Moore recently gave some 15 Central College students a tour of Tarmac's cement plant in Barnstone, Nottinghamshire, including the bagging, packing and distribution areas, as well as the test laboratory. The students also looked around the plant's recently-opened Training Academy, where Tarmac staff demonstrated how to correctly install some of its products.

"It was a great opportunity for the students to understand more about the different roles that exist within the cement industry," said Stephen Nicolls, Course Tutor at Central College. "This kind of trip really brings to life the many and varied opportunities in the construction industry. We'd like to thank Barnstone Cement for hosting us on the visit."

Switzerland: LafargeHolcim appoints new Head of Communication, Public Affairs and Sustainable Development

LafargeHolcim has appointed Caroline Hempstead as its new Head of Communication, Public Affairs and Sustainable Development, with effect from 1 December 2015, reporting to CEO Eric Olsen.

Since 2007, Hempstead has been responsible for the global Corporate Affairs team at pharmaceutical company AstraZeneca, where she also chaired the Sustainability Council. Prior to joining AstraZeneca, Hempstead spent 10 years with Royal Dutch Shell. She has also held corporate affairs roles at Inchcape, the London Stock Exchange and Harrods. Hempstead is a British national with a degree in French Studies from Manchester University.

Romania: LafargeHolcim's cement sales up 15.3%

LafargeHolcim's cement sales in Romania rose by 15.3% year-on-year in the first nine months of 2015, supported by building activity in the Bucharest area, although prices fell by 0.8%. LafargeHolcim has decided to sell the assets of one of its parent companies in Romania, Germany and Hungary. In Romania, the assets are Lafarge's.

News in brief

Germany: HeidelbergCement appoints three board members

HeidelbergCement has appointed three new managers to its Board with effect from 1 February 2016. Hakan Gurdal, formerly of Turkish Sabancı Holding and previously responsible for its jointly-operated business with HeidelbergCement, was appointed to a newly-created executive position for the African/Eastern Mediterranean region. Jon Morrish will head HeidelbergCement's North American business. The third newcomer is Kevin Gluskie, who will lead operations in the Asia-Pacific region.

Italy: Italcementi job cuts halved ahead of takeover

Labour Undersecretary Teresa Bellanova has announced that Italcementi's layoffs will be 538, not 1080 as earlier reported. The deal to reduce job losses in Italcementi's workforce of 3000 was made by the government, unions and management ahead of the Euro3.7bn takeover by HeidelbergCement.

Russia: HeidelbergCement to upgrade Slantsev plant

HeidelbergCement's Slantsev cement plant in Cesla, Leningrad, plans to upgrade its production and continue the development of its quarry. The investments in the project will amount to Euro14.5m.

Poland: Sales up by 3.6%

Cement production in Poland fell by 3.1% year-on-year to 1.22Mt in November 2015, while sales rose by 3.6% to 1.24Mt, according to Poland's Cement Producer Association. Cement production grew by 0.6% to 14.7Mt in the first 11 months of 2015, while sales rose by 1.1% to 14.9Mt in the same period.

Russia: LafargeHolcim launches new cement base for mortars

LafargeHolcim's plant in Kolomna, Moscow, has started production of a new cement base for mortars under the Kelma brand. It has high strength, fine adhesion to surfaces and a long retention of mobility that provides the plasticity necessary for construction work without adding extra water. The product is being sold in 50kg bags.

Italy: Antitrust body opens probe into alleged cement price fixing

Italy's antitrust authority has opened an investigation into four cement companies for alleged price fixing and, with the tax police, has searched the offices of the companies. The companies under investigation are Buzzi Unicem, Cementir Italia, Industria Cementi Giovanni Rossi and Holcim Italia.

"The case concerns the possibility of an agreement to coordinate cement sales price increases," said the authority in a statement. Holcim Italia, part of LafargeHolcim, confirmed the inspections. It said that the company has always acted according to the law and has 'policies and procedures in place that are designed to ensure compliance with principles and rules of fair competition prohibiting anti-competitive behaviour and the abuse of a dominant market position.' Buzzi said that it is confident that it will be able to demonstrate that it has always acted in compliance with competition law.

Ireland: Used tyres to reduce costs at Irish Cement

Irish Cement will burn used tyres in a bid to cut costs and secure jobs at its cement plant in Limerick, Ireland. The company plans to switch to dry waste material such as rubber from used tyres and plastic to heat the kiln at the plant. The switch will cut costs and make the plant cleaner and more competitive, according to the company.

A spokesman for Irish Cement said that the company would lodge a planning application shortly with Limerick City and County Council for the replacement of fossil fuels with alternative fuels and raw materials to improve the sustainability of its operations. The company will also seek a revision of its licence from the Environmental Protection Agency.

"Limerick is Ireland's oldest cement plant, having commenced operations 77 years ago. Its continuous operation has been sustained by continuous investment in new technologies and processes. After the recent period of reduced demand, cement production is once again on the increase at home and abroad. This fuel replacement programme will be key to sustaining this growth," said Plant Manager Pat Robinson. "Based on experience in other cement plants in Ireland and throughout Europe, the opportunity to reduce our dependence on imported fossil fuels will prove critical to our ability to operate competitively and sustain jobs at Irish Cement Limerick into the future."

Irish Cement's plant in Limerick, Ireland, will now burn waste tyres as alternative fuels.

Germany: HeidelbergCement's Burglengenfeld cement plant to be upgraded

HeidelbergCement has decided to modernise its Burglengenfeld cement plant in Bavaria with parts and services from IKN and Gebr. Pfeiffer.

IKN won the contract for the engineering, supply and installation of a complete 4000t/day pyroprocessing line, from raw meal feed to clinker discharge. Included in the scope of supply are integration engineering, supply and installation of add-on components for the raw meal grinding plant. The upgraded cement plant will feature state-of-the-art technology to comply with the targeted production level and future emission limits.

The new line will consist of a two-string, five-stage preheater tower with inline calciner. IKN's preheater and calciner design will ensure minimum pressure drop at maximum performance and high efficiency. The kiln line will be optimised to use a variety of alternative fuels. There will also be a tertiary air duct damper, which has proven successful in operation for more than three years with outstanding reliability and performance. Another essential component of the plant is IKN's Pendulum Cooler, which is highly reliable and has low maintenance and operational costs. Its design allows the recirculation of bypass gas into the recuperation zone to boost cooler efficiency.

As part of the modernisation of the kiln line, the four existing MPS vertical roller mills will be replaced with two new Gebr. Pfeiffer MPS 4250 B roller mills. Each mill is designed to achieve a capacity of 200t/hr of cement raw material ground to a fineness of 12% R 90µm. The drive power per mill is 2250kW. Gebr. Pfeiffer will also supply the equipment for the external material circulation system and the cyclone collectors and mill fans. Engineering services covering the plant layout and the integration of the process-related ductwork within the existing plant are also included. Raw mill one is scheduled to go on stream at the end of 2016 and raw mill two is scheduled to start operations in 2017.

HeidelbergCement's Burglengenfeld plant will undergo a major modernisation project.

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US: Agreement reached over clean-up of historic Holcim cement plant

An agreement has been reached to clean up the site of the former Holcim cement plant in Spokane Valley, Washington, where Holcim operated a cement production site until 1967. The site was then used for cement distribution for a number of years before it was closed. In 2006, storage silos were torn down, leaving behind cement kiln dust with contaminates including arsenic, lead and cadmium, as well as benzene and gasoline associated with train activity and fuel storage on the site. Neighbouring lots owned by the city of Spokane Valley and Neighbourhood Inc were also contaminated.

As the contamination was deemed a threat to human health, the Department of Ecology became involved to establish a clean-up plan. Jeremy Schmidt, the Department of Ecology's Site Manager, said that a consent decree has been signed by all parties and that clean-up is scheduled for the summer and autumn 2016. "Work may be delayed for one year if we can't get contractors out there at the right time," added Schmidt. The work must be done when the groundwater level is low so as not to increase contamination. The kiln dust has now turned to cement and must be scraped off, piled in one place and capped with cement to stop contaminants from leaking into soil and groundwater.

Holcim still owns the site and both Schmidt and Spokane Valley Attorney Cary Driskell said that the company has been responsive and responsible. "They have been very easy to work with," said Driskell. He added that there was a range of options for the cleanup, with costs ranging from US$1.6-10m. "It will not cost Spokane Valley anything."

Brazil: Votorantim posts US$22m net loss in the third quarter of 2015

Votorantim has posted a net loss for the third quarter of 2015 due to the impact of a deep economic recession and rising US Dollar debt-servicing costs after a currency plunge.

Votorantim posted a net loss of US$22m during the period, down sharply from a profit of US$155m in the third quarter of 2014. Earnings before interest, taxes, depreciation and amortisation (EBITDA) fell by 33% to US$429m, as Votorantim booked one-time earnings from an energy auction in the 2014 quarter. The Brazilian Real fell to an all-time low in the third quarter of 2015, driving up Votorantim's gross debt by US$1.88bn to US$8.06bn at the end of September 2015.

Chief Executive Officer João Miranda highlighted investments outside of Brazil as the country suffers its sharpest economic contraction in 25 years. "In the face of Brazil's economic recession, our diversified business and international presence become even more important in delivering consistent results," said Miranda. Votorantim's capital spending rose by 55% to US$246m in the quarter, half of which was intended to expand capacity, particularly at cement plants outside of Brazil.

News in brief

Colombia: Argos expects US$2.61bn revenue in 2015

Cementos Argos expects its revenue to hit US$2.61bn in 2015. Its revenue grew by 35% year-on-year to US$1.86bn in the first nine months of 2015.

Mexico: Cemex recognises SCT infrastructure projects

Two projects completed by the Mexican Secretariat of Communications and Transport (SCT) were awarded with Cemex Works Awards 2015 in the category of infrastructure and construction. The second boulevard to access Tijuana's beach in Baja California and Manzanillo's elevated viaduct, Viaducto II, in Colima were recognised.

Chile: Cemento Polpaico to build 23.5MW solar park

Chile's environmental authorities have approved Cemento Polpaico's plan to build a 23.5MW photovoltaic park to supply the national grid. The US$42m park will include 243,120 modules near Cemento Polpaico's Cerro Blanco plant in Tiltil, Chacabuco. The annual output is estimated at 44GWh.

Colombia: New CEO named

The Cementos Argos Board of Directors has unanimously appointed Juan Esteban Calle as its new CEO as of 1 April 2016. Calle will replace Jorge Mario Velasquez, who was recently named the new CEO of Grupo Argos.

Brazil: Votorantim wins award

Votorantim Cimentos received the Social Responsibility Seal from Instituto Desportivo da Crianca in the seventh Premio Brotar Awards for its Programa Via scheme, which helps 100 children aged 7-16 participate in charity projects.

US: Ash Grove donates to Nebraska conservatory

Ash Grove Cement has donated US$20,000 to the Niobrara Valley Preserve, a Nebraska conservatory, to help fund a workshop and laboratory and support conservation.

Brazil: Camargo Corrêa offers InterCement assets in debt recovery plan

Brazilian construction group Camargo Corrêa is now prepared to sell assets to help reduce its US$6.38bn debt, according to CEO Vitor Hallack.

"We put up US$2.41bn to acquire Cimpor in 2012, which became InterCement. It was a strategic option to double our size in Brazil and increase our international presence," said Hallack. Brazil's economy, however, has negatively impacted the company's plans.

To resolve matters, Camargo Corrêa has extended US$536m of its short-term debt. After negotiating with banks, its obligations have been extended to 66 months from 12 months. Moreover, assets in two companies could be sold off if the price is right and the opportunities arise. The company could sell off textile group São Paulo Alpargatas and seek partners for InterCement, according to Hallack. He reiterated that the company's energy business, CPFL Energia, and transportation infrastructure arm CCR, would not be sold.

US: Ecocem plant faces possible planning setback

Irish cement maker Ecocem's proposed US$50m grinding plant in San Francisco Bay faces a potential planning setback after receiving almost 500 submissions challenging its environmental impact report.

Ecocem wants to build the plant on the site of an old flour mill in the harbour of Vallejo, California. It would grind slag from iron smelting in a process that cuts greenhouse gas emissions from normal cement manufacture by 90%. The plant would be Ecocem's first venture in the US.

However, some 400-500 people and organisations have questioned the company's assessment of the plant's likely impact on the environment. The council planned to have cleared all planning hurdles by December 2015, but the volume of questions posed during the public consultation period means that the deadline could be pushed back to March 2016. In addition, a group of citizens recently began a petition to remove four council members said to favour Ecocem's project.

California law requires Ecocem's subsidiary, Orcem Americas, which is directly responsible for the project, to answer the questions before preparing a final environmental impact report. The city's Architectural Heritage and Landmarks Commission will decide if the buildings that would be demolished to make way for the plant are historic, which was expected to happen in December 2015. The proposal will then have to pass the Vallejo Planning Commission and get the support of a majority of councillors.

A waterfront neighbourhood with bungalows dating back to the 1940s sits too close to the proposed Ecocem cement plant, according to concerned Vallejo residents.

Costa Rica: Cemex focuses on services

Alejandro Ramirez, Director of Cemex in Costa Rica, has said that the company will increase its products and services portfolio in order to consolidate operations.

Instead of focusing on prices to recover from the slowdown in by Costa Rica's construction sector, Cemex will concentrate on the launch of services and solution tools like the mobile application 'My Cemex.' Ramirez underlined the importance of providing added value to services to avoid losing clients to competitors. He revealed that the company's sales would be stable by the end of 2015 due to the drop in infrastructure projects. In Costa Rica, Cemex is implementing a three-phase expansion programme to increase its capacity. The first stage was completed in 2015 with US$5.70m, which bolstered capacity by 10%.

Peru: Cementos Pacasmayo seeks expansion

Cementos Pacasmayo, which produced 2.35Mt of cement in 2014, aims to increase cement production at its 1.6Mt/yr Piura plant on Peru's north coast as it gears up to handle growing demand from the country's infrastructure projects.

Central and regional governments are investing in infrastructure to prevent flooding and landslides caused by the El Niño weather phenomenon, which in 1998 caused US$1.8bn in damage in Peru. "There's an important level of spending for El Niño and the regional government feels more confident and is investing more efficiently," said company CEO Humberto Nadal.

Cementos Pacasmayo increased its third quarter profit by 36.5% year-on-year to US$17m as cost-cutting offset a 1% drop in sales to US$92.7m.

Canada: Lafarge moves to reach emissions targets with new kiln in Canada

Tony Levstik recently returned to the Lafarge cement plant in Exshaw, Alberta, to pull the plug on its oldest piece of equipment. He was the original operator of the kiln when it was first installed in 1975.

Kiln six will replace kiln four as part of Lafarge's ongoing expansion project. The new technology will reduce SO_2 emissions by 30%, NO_x emissions by 75% and greenhouse gas emissions by 25%. It will also have better filter technology to improve dust control. Kiln four used gravel bed filter technology, which was prevalent in the 1980s-1990s, but kiln six will have a state-of-the-art bag house.

"You can't make cement without using a lot of energy. These new kilns are a lot more energy-efficient, so we won't use as much fossil fuel or as much power to run the new plant," said the Lafarge Plant Manager, Jim Bachmann. Kiln six is expected to start operations in 2016.

Tony Levstik (left) and Jim Bachmann (right).

News in brief

India: Reliance gains on asset sales talks with UltraTech

UltraTech Cement is reportedly in advanced discussions with Reliance Infrastructure to buy its cement assets. Reliance put up its cement units for sale in October 2015 to reduce its US$3.86bn debt. The assets are expected to raise US$749-824m.

Australia: New Managing Director at Adelaide Brighton

Martin Brydon has been appointed as the Managing Director of Adelaide Brighton. He was previously the company's CEO.

India: New mining lease

BMM Cements has won a 20-year limestone mining lease from the Government of Andhra Pradesh for 4.55km^2 of land near its plant in Ananthapur, Andhra Pradesh.

Uzbekistan: Capacity growth

Uzbekistan plans to increase its cement capacity from 7.5Mt/yr in 2014 to 7.9Mt/yr in 2015 and 8.9Mt/yr by 2019. The Kyzylkumcement and Bekabadcement cement plants will invest US$30.7m and US$5.5m, respectively, to upgrade equipment.

India: Durg plant launched

JK Lakshmi Cement has commissioned a 1.7Mt/yr cement plant in Durg, Chhattisgarh at a cost of US$263m.

China: Chairman retires

Anhui Conch's Chairman, Guo Wensan, has retired. Vice Chairman Wang Jianchao will assume the Chairman's duties until a new Chairman is elected.

India: India Cements' Managing Director 'violated FEMA norms'

The Central Bureau of Investigation (CBI) has said that India Cements' Managing Director N Srinivasan sold his Bharati Cements shares to a French company contrary to the Foreign Exchange Management Act (FEMA). The CBI said that his initial investment was a bribe, not an investment, and that selling shares to foreign entities without permission from the authorities is a FEMA violation.

India: Ambuja Cements appoints Suresh Joshi as CFO and Christof Haessig as Additional Director

Ambuja Cements, part of LafargeHolcim, has appointed Suresh Joshi as its Chief Financial Officer (CFO) with effect from February 2016. This followed the resignation of Sanjeev Churiwala, Ambuja Cements' former CFO, in October 2015.

In addition, Christof Haessig was appointed as an Additional Director (Non-independent, representing the Promoter Group) on the Board of Directors, effective from 9 December 2015. Haessig was previously the Head of Corporate Strategy and Mergers and Acquisitions at LafargeHolcim.

Ambuja Cements reported a 36% year-on-year decline in its standalone net profit to US$23m for the quarter that ended on 30 September 2015, compared to a net profit of US$35.8m in the same period of 2014. Its total standalone income fell by 4% to US$316m in the quarter from US$330m in the same quarter of 2014.

China: Shanshui Cement's management ousted

The management of China Shanshui Cement was ousted two days after executives of its parent were dismissed, in a move analysts have said underscores efforts by the company's biggest shareholder, Tianrui Group, to solidify control.

Shandong Shanshui Cement Founder Zhang Caikui, Chairman Zhang Bin and CFO Henry Li were among key managers whose positions were terminated on 3 December 2015. Tianrui's Vice Chairman Li Heping has succeeded Zhang Bin to become Chairman. Shandong Shanshui Cement Group said in a statement that the Shanshui Cement Board's removal of management and Directors by Tianrui was illegal as it required the approval of the Chinese government.

Australasia: LafargeHolcim's Australasian business is not up for sale

LafargeHolcim has said that, despite what has been reported recently in the media, its operations in Australia and New Zealand are not for sale. The rumours are thought to stem from LafargeHolcim's recently-announced plan to divest US$5bn of assets in 2016 after posting unexpectedly weak results in the third quarter of 2015. Speculation had emerged that it might exit the Australasia region.

However, according to local media, an internal email sent to staff on 30 November 2015 from Holcim Australia Chief Executive Mark Campbell said that the company was 'not currently being sold,' but could not rule out an exit in the long term. "I have checked whether LafargeHolcim had made a decision to sell the businesses in Australia and New Zealand and started a sale process without my knowledge and the answer I have received is 'no,'" said Campbell. "That said, organisations change focus over time and it is impossible to say that we will always be part of the LafargeHolcim group."

Australian-listed rivals, including Boral, Fletcher Building and Adelaide Brighton, are seen as potential acquirers, should LafargeHolcim later choose to sell off its local arm. Ireland's CRH may also be interested. However, Morgan Stanley said that many of LafargeHolcim's local competitors might run into competition issues, given that the market is concentrated among several large players.

While Lafarge had a limited local presence in Australasia, Holcim bought a string of Australian assets from Mexico's Cemex in 2009 for US$2bn and now boasts more than 350 sites nationwide.

China: Anhui Conch to double its stake in West China Cement to 51.57%

Anhui Conch has agreed to more than double its stake in West China Cement for US$592m amid consolidation in an industry suffering from overcapacity.

Conch International Holdings (HK), a wholly-owned unit of Anhui Conch, plans to increase its holding in West China Cement to 51.57% from its current stake of 21.17%. If the transaction goes through, Anhui Conch will make a mandatory cash offer for all of the shares of West China Cement that it doesn't already own.

West China Cement agreed to buy four units of Anhui Conch and will issue shares in itself to pay for the purchase. West China Cement will issue 3.403 billion shares at US$0.17 each for a total of US$592m. The issuance will raise Anhui Conch's stake in West China Cement. Should Anhui Conch be required to make an offer for the rest of West China Cement, it will pay US$0.22 in cash for each share.

Tajikistan: Plant funds sought

The government of Tajikistan is looking for investors for a 1Mt/yr cement plant near the Tuyun-Tao limestone deposit in Shakhritus, in the south of the country.

The US$350m project was included in the government's investment portfolio for implementation through direct investments, according to the Tajikistan State Committee of Investment and State Property Management. Russian, Iranian and Chinese companies have previously showed interest in the deposit. In 2012, China's CNBM prepared a feasibility study for the project, but it did not reach the implementation phase due to its high cost and the absence of infrastructure.

Cambodia: CITIC wins US$262m plant contract

China's CITIC Heavy Industries Company has secured an engineering, procurement and construction contract from a Cambodian conglomerate to build a US$262m, 5000t/day cement plant in Cambodia.

Under the contract, CITIC will carry out the detailed engineering design of the project, procure all the equipment and materials necessary and construct a cement plant for Chip Mong Insee Cement Corporation, a subsidiary of Chip Mong Group. "It will be Cambodia's largest single cement line with the most modern state-of-the-art equipment and technologies from Germany and China," said Aidan Lynam, CEO of Chip Mong Insee Cement Corporation. "It will be a world-class cement plant that produces top quality products, with emission controls that protect the environment, and with the lowest carbon footprint." The plant is a joint venture project with Thailand's Siam City Cement.

Mines and Energy Minister Suy Sem said that the contract between the two companies clearly showed the confidence of investors in Cambodia's political stability and business opportunities. "Cement demand in Cambodia is very high due to the rapid progress of the construction industry," said Sem. "I believe that this cement plant will be able to meet the cement demand of Cambodia." It is estimated that the country's domestic cement demand is about 4Mt/yr.

South Korea: UNTHA shredder boosts SRF production

A new solid recovered fuel (SRF) production facility is now fully operational in Wonju City, South Korea, after works were completed by global shredding company UNTHA and local partner PERITUS.

Korean waste management specialist Zion built the SRF plant to make smarter use of its residual materials. With the new system in place, pre-sorted construction and demolition waste and commercial and industrial waste can be shredded to produce a homogeneous 50mm fuel for the cement industry.

The UNTHA XR3000C shredder with cutting concept was chosen following a series of trials at UNTHA's Austrian headquarters. Demonstrations showed that the technology could achieve throughputs of 60-70t/day, with scope to almost double that in the future. The XR3000C's flexibility also means that Zion can achieve a 40-50mm particle size from the single step shredding of plastic bales, which has further boosted the company's SRF production capabilities.

"South Korea may only be in the infancy of its waste-to-energy journey, yet the nation has formed a very sophisticated and disciplined approach to its waste roadmap relatively quickly. Legislation is in place to drive the production of <50mm SRF and the necessary infrastructure is fast evolving to accommodate this," said UNTHA's Head of Business Unit Waste, Peter Streinik. "What we see here with Zion, however, is not just a company striving for compliance. They're prioritising energy-efficiency, profitability and innovation too, to realise the wider benefits that come with smarter waste management." Zion extracts as many materials as possible, including bricks, metal, sands, glass and batteries, for re-use or recycling, prior to them entering the SRF manufacturing stream.

The UNTHA XR3000C shredder installed by Zion in Wonju, South Korea.

Australia: James Hardie opens expanded fibre cement plant

James Hardie has opened its expanded fibre cement plant in Carole Park, Queensland following a US$64.9m investment. Production capacity was increased by 40% to meet market demand and support James Hardie's continued market growth.

"The new facility reflects our confidence in our Australian business, the future of manufacturing in this country and the underlying economy of Australia," said James Hardie's CEO Louis Gries.

Philippines: Republic Cement plans expansion

Republic Cement Services Inc (RCSI) is considering building cement plants in Visayas and Mindanao following a government drive to improve the country's infrastructure.

According to RCSI President Don Lee, the move is in response to announcements made by the Department of Public Works and Highways (DPWH) that more projects are needed in the regions. "At this point, the DPWH is more aggressive in visions, projects and allocations of the budget in Visayas and Mindanao," said Lee. The Public Works department, he said, needs to ensure that the local industry has enough capacity to serve the country's development needs. "It is sending us a reminder to be faster in increasing cement capacity in Visayas and Mindanao." Lee said that cement company expansions are critical to supply sufficient raw material supplies for the country's energy, water, telecommunications and transport projects. Included in RCSI's upcoming expansions are an 800,000t/yr grinding plant in Norzagaray, Bulacan that is expected to be operational early in 2016.

The Cement Manufacturers' Association of the Philippines reported an 18% year-on-year increase in cement demand in the third quarter of 2015. "I think that for the full year, we're at 13.5-14%. We have one of the healthiest cement markets in the world, driven by construction in infrastructure, individual homes and mid-high rise constructions," said Lee. He added that he was also confident that RCSI would be able to post above industry growth. "With our new capacity and new shareholders, we are in a good position to continue to invest ahead of demand. Our two new parents are financially healthy," said Lee. RCSI is a joint venture between Aboitiz Equity Ventures and CRH. The two companies secured 99.09% ownership of Lafarge Republic, which operates the Republic Cement brand, for US$530m.

New Zealand: Holcim's first 22,000t cement order arrives at Timaru Port

Holcim's first 22,000t cement order arrived at the Timaru Port from the Kanda Port in Tokyo in December 2015. It is understood that Holcim plans to receive 18 cement ships annually at its newly-completed port facilities.

Holcim's 30,000t cement silo at Timaru is now in its completed form and no radical changes will be made to it, according to Holcim's Capital Projects Manager, Ken Cowie. The bright white surface will not be painted with the Holcim logo, nor will it be painted by the community. However, if the council or members of the public are interested in shining light displays onto it, Holcim could be open to that, said Cowie. He added that the Holcim-owned Milburn Carrier II, which will ship out-bound orders from the Timaru Port, was scheduled to arrive for the first time at the end of December 2015.

Holcim's first order of 22,000t of cement arrived at the Timaru Port in New Zealand via the Esperance Bay ship in December 2015.

Vietnam: New line for Cong Thanh Group

Cong Thanh Group held a ceremony to mark the first batch of cement made by the second production line at its cement plant in Thanh Hoa. The new line has a capacity of 12,500t/day of clinker and 3.6Mt/yr of cement.

The line will contribute to the province's industrial production growth and contribute US$26.7m to the provincial budget. Vietnam now has 76 cement production lines with a combined output of 81.6Mt/yr. The ministry estimated that Vietnam's cement and clinker sales would reach 71.5-72Mt in 2015, fulfilling the year's target, including 55-55.5Mt of domestic sales, rising by 9-9.5% year-on-year. Clinker exports were expected to fall by 19% to 16.5Mt, meeting 85% of the year's target.

India: Chennai reconstruction to boost demand

Cement plants in Tamil Nadu, Andhra Pradesh and Telangana expect to see higher cement demand as Tamil Nadu starts reconstruction after recent widespread floods in Chennai, while Andhra Pradesh builds its new capital city, Amaravati, and lays new concrete roads.

Since 6 November 2015, Chennai and three coastal districts of Tamil Nadu received the highest rainfall in the last 100 years, which caused damage to houses, bridges and roads. Initial estimates have suggested that the state government will need to spend US$1.2bn on reconstruction projects. It also plans to build new green houses as part of its ongoing state development.

China/Germany: Hardtop Huaheng (Shan Xi) wear-resisting castings Co., Ltd. launched

On 1 June 2015, Hardtop established a joint venture company called Hardtop Huaheng (Shan Xi) wear-resisting castings Co., Ltd. The venture, which was granted its business licence on 18 November 2015, is based in Yangquan City, Shan Xi, about 400km south-west of Beijing. It is the first joint venture between a German and Chinese company in Yangquan, a city with 1 million inhabitants.

On 12 December 2015 Hardtop Huaheng (Shan Xi) wear-resisting castings Co., Ltd. had its official opening. Dr. Armin Ißleib, owner director of Hardtop Gießereitechnologie GmbH, Magdeburg and Chris Hofmann also of Hardtop, customers and officials representing Yangquan City and the Mayor, Director of the Technical Department, Director of the Investment Promotion Department, representatives of the Investment Bank and representatives of the Communist Party all attended the opening.

The foundry has 65 employees and encompasses 20,000m^2 of land. Its production capacity is 1600t/yr of wear castings. Bi-metallic hammers will be the company's future specialty product. The first bi-metallic hammers were produced during the second week of December 2015.

Germany's Hardtop Gießereitechnologie GmbH was established in 1997. Today the company focuses on the development of innovative foundry technologies, bimetal casting technologies and services for the foundry industry.

On 12 December Hardtop Huaheng (Shan Xi) wear-resisting castings Co., Ltd held its official opening party.

The new joint venture was granted its business license on 18 November 2015.

Representatives from Germany and Yangquan and other officials attended the opening.

Dr. Armin Ißleib, Owner Director of Hardtop Gießereitechnologie GmbH (second from the right) and Hardtop Huaheng (Shan Xi) wear-resisting castings Co., Ltd. personnel.

A ladies brass band played during part of the official opening ceremony. There were also fireworks.

Local employees started operations soon after the plant construction was completed.

The plant will specialise in the production of bi-metallic wear parts.

Amy Saunders, Global Cement Magazine

The cement industries of Central Asia - Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan

The countries of Central Asia, namely Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, are all former Soviet Union countries with a combined population of 76.3 million in 2015. With the exception of Azerbaijan, they are colloquially known as the 'stans.' All are emerging market economies, although their growth in recent years has been disparate (Figure 1). Here, *Global Cement* reports on their cement industries, including key players, market developments and recent major events.

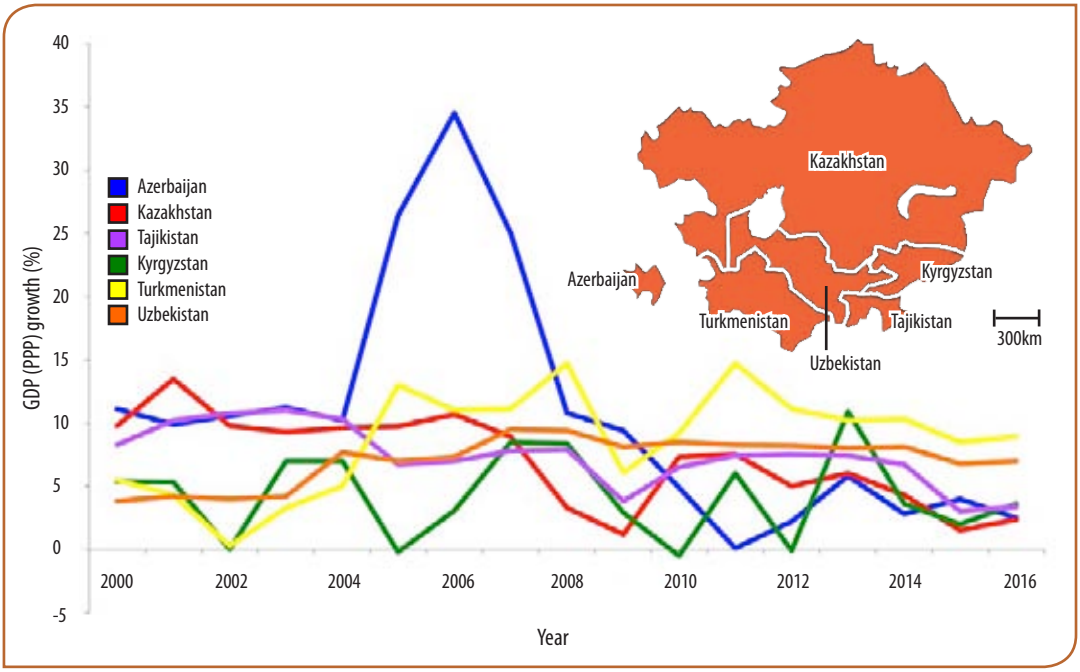
Azerbaijan

Azerbaijan is one of the major emerging market economies with a population of 9.78 million in 2015.[1] The country is largely dependent upon the oil and gas industries, affording it a steadily-growing, at 2.8% in 2014, GDP of US$166bn (Purchasing power parity - PPP) and a GDP/capita of US$17,800. Azerbaijan stands out from the other Central Asian countries discussed here for the spike in GDP growth that it experienced in 2004-2007, when GDP growth hit 26.4%, 34.5% and 25%, respectively (Figure 1). The sharp growth was attributed to rapid increases in oil production at the time. Its 2015 GDP growth estimate was 4%, falling to 2.5% in 2016.[2] Government corruption is reportedly widespread and in 2009, presidential term limits were eliminated in a referendum.

Cement industry

Azerbaijan has three active integrated cement plants with 4.7Mt/yr of cement production capacity (Figure 2). Two of the plants, those owned by Norm Sement and Akkord Cement, started operations in the last two years. Prior to that, Holcim Azerbaijan was the only integrated cement plant in the country.

Azerbaijan's cement sector has seen a mixture of highs and lows in recent years. The rate of infrastructure and housing development has been uneven and the country's reliance on the oil and gas industries has seen the economy suffer since prices crashed in 2014. The devaluation of the Azerbaijan Manat has also raised production costs across many sectors. Indeed, Holcim Azerbaijan said in its 2014 annual report that, while there have been improvements, the country's economy is still negatively impacted by a non-freely



Right - Figure 1: GDP growth (%) of Azerbaijan, Kazakhstan, Tajikistan, Kyrgyzstan, Turkmenistan and Uzbekistan in 2010-2014 and IMF World Economic Outlook October 2015 forecasts for 2015-2016. **Source:** http://databank.worldbank.org/data/home.aspx.

convertible currency and rapidly-changing tax, currency and customs regulations. Despite this, in 2014 construction materials production grew by 22.2% year-on-year to US$585m. Cement production grew by 40.5% to 2.98Mt and gypsum production increased by 23.3% to 192,800t, according to the Azerbaijan State Statistics Committee.

Norm Sement's CEO Hasan Yalcinkaya said that, in 2014, domestic cement demand was 4.3Mt and it would be much the same in 2015. "Currently, about 60% of the market is provided by local producers and 40% of cement is imported from neighbouring countries," said Yalcinkaya. He said that, since the start up of Norm Sement and Akkord Cement, domestic cement plants were able to meet market requirements. "Our goal is to reduce cement imports as much as possible. The import of cement products is gradually decreasing. The share of imported cement is only 5% of the total market volume, while the share of clinker is 10%," said Yalcinkaya. In a recent visit to Norm Sement featured in the November 2015 issue of *Global Cement Magazine*, the company's Chief Operations Officer Osman Nemlisaid said that, in the first eight months of 2015, Azerbaijan's cement imports fell by 72% year-on-year to US$22m.

Azerbaijan plans to double its production of building materials, including cement, in 2016-2019, according to the government's draft concept of socio-economic development. "It is planned to expand the production of building materials and bring their quality to international standards. Supplementary investments will be raised in this area, modern eco-designed technology will be introduced and the export of local building materials promoted," said the draft. The government expects building materials production to grow by 6.1% to US$608m in 2016, by 13.1% to US$708m in 2017, by 20.3% to US$871m in 2018 and by 16.2% to US$1.03bn in 2019. However, according to other government forecasts, the construction sector is expected to decline by 4.6% in 2016 to US$17.5bn. The Deputy Minister of Economy and Industry, Sevinj Aliyeva, had previously said that the decline of the construction sector continued against a background of cuts in public investments. "Measures to attract additional sources of financing, the use of new financing mechanisms in the housing market and the expansion of mortgage lending are important to revive the construction sector," said Aliyeva.

In the summer of 2015, local media reported that Azerbaijan's construction industry was benefitting from the sporting and tourism sectors.[3] Following the Eurovision Song Contest 2012 and the 2015 European Games, upcoming events include the 2016 Baku

Left - Figure 2: Integrated cement plants in Azerbaijan in 2015. **Source:** *The Global Cement Directory 2016.*

Left - Figure 3: The 2Mt/yr Norm Sement plant in Garadagh, Baku, Azerbaijan is the largest cement plant in the country.

Right - Figure 4: Akkord Cement plans to increase the capacity of its 1Mt/yr plant in Gazakh, Azerbaijan, to 3Mt/yr by 2017.

European Grand Prix, the 42nd Chess Olympiad in 2016, the 2017 Islamic Solidarity Games and four matches of the 2020 UEFA European Championships. These events have and will continue to provide a significant rise in the construction of hotels, restaurants, stadia and infrastructure, among others, prompting higher demand for cement and other building materials.

Norm Sement

Norm Sement is the largest cement plant in Azerbaijan and in the south Caucasus region, with 2Mt/yr of cement production capacity in Garadagh, Baku (Figure 3). Cement production using imported clinker started in September 2013 and clinker production started later in May 2014. The US$326m plant reached its installed production capacity in January 2015. Norm Sement's Chief Operations Officer Osman Nemli said that the plant held 30% of the market share by February 2015.

According to Hasan Yalcinkaya, Norm Sement's CEO, 2014 was successful for the company and Azerbaijan's cement industry as a whole. "Since its inauguration in July 2014, the plant has been working very efficiently, has started to produce its own clinker and has reached its design capacity," said Yalcinkaya. "510,000t of cement and 471,000t of clinker was produced in 2014. We were able to cover 20% of the market for the six months since starting clinker production. We plan to increase our market share with the production of high-quality cement."

Norm Sement also has investment plans for the near future. "We have several projects on efficiency and production improvements, in particular the expansion of the product range. We will continue to reduce our energy consumption," said Yalcinkaya. With regards to new products, Norm Sement plans to start oil well cement production in 2016 and potentially white cement too, depending on market demand. According to Yalcinkaya, oil well cement is a very sought-after product in Azerbaijan and its domestic production would reduce imports. Norm Sement is also preparing to export its products to the Caspian Sea countries. "Currently, we are considering exporting our products to the south of Russia, Kazakhstan and Turkmenistan," said Yalcinkaya. In addition, Nemli divulged that the plant would install a waste heat recovery (WHR) system to use hot gas from the cooler and the preheater to produce electricity.

Holcim Azerbaijan (LafargeHolcim)

Holcim Azerbaijan, part of the recently-formed LafargeHolcim group, has a 1.7Mt/yr cement plant in Garadagh, Baku. It is the oldest and second-largest cement plant in the country. The plant was constructed in 1949 and has since been upgraded and expanded with new kilns and other technologies. Holcim bought the plant when it was privatised in 1999 and renamed it from Garadagh Cement OJSC to Holcim Azerbaijan in 2012.

In 2014, the latest year for which information is available, Holcim Azerbaijan's sales fell by 24% year-on-year to US$128m and its profit fell by 23% to US$37.9m. However, the company's fuel and electricity expenses dropped significantly during the year, by 12% and 17.5% respectively.

Akkord Corporation

Akkord Corporation was established in 2005 as a construction materials company with interests in the cement, concrete, steel and other building materials

Kazakhstan **11.85Mt/yr**

1. Central Asia Cement (Steppe Cement), Karaganda Plant, Karaganda 3.6Mt/yr
2. Italcementi, Shymkent Plant, Shymkent 1.6Mt/yr (Modernisation to 1.2Mt/yr due in 2016)
3. Sastobe White Cement (BaselCement), Sas-Tiubinsky Plant, Sastobe 0.35Mt/yr (Expansion to 0.7Mt/yr planned)
4. Semey Cement (UCG), Semey Plant, Semey 1.2Mt/yr
5. Tenir Group, Vostok Plant, Vostok 1.6Mt/yr
6. Jambyl Cement (60% Vicat), Mynaral 1.1Mt/yr (Possible new duplicate line to follow)
7. HeidelbergCement, Bukhtarma Plant, Zyryanovsk 1.6Mt/yr
8. HeidelbergCement, CaspiCement Plant, Shetpe, Mangystau 0.8Mt/yr
9. International Cement Kazakhstan / Nurzhan Shakirov, Almaty Announced in 2015
10. Huaxin Cement 5Mt/yr (Announced in 2015)
11. Gezhouba-Shiyeli Cement, Shiyeli, Kyzylorda 1Mt/yr (Announced in 2015)
12. Rudny Cement, Kostanay 0.5Mt/yr (Due in 2016)
13. TOO Kokshe Cement, Zaozernoe Plant, Akmola 2Mt/yr (Under construction)
14. BI Cement, Akmola 1.1Mt/yr (Under construction)

Right - Figure 5: Integrated cement plants in Kazakhstan in 2015. **Source:** *The Global Cement Directory 2016.*

industries. The 1Mt/yr Akkord Cement plant in Gazakh, Dash Salakhli, currently the smallest in the country (Figure 4), started clinker production in August 2014 and today serves the domestic market by road and the export markets by the Black Sea and the Caspian Sea. There are plans for the Sinoma-built plant to be expanded to 3Mt/yr by 2017.

Kazakhstan

Kazakhstan is a major emerging market economy that has had the same President, Nursultan Nazarbayev, since declaring independence from the former Soviet Union in 1991. Its population was 18.2 million in 2015. With a land span of 2,724,900km^2, it is the ninth-largest country in the world and the largest in Central Asia.[1] The economy is dependent upon the hydrocarbon sector. Its GDP grew by 4.3% in 2014 to US$420bn (PPP) and was estimated to grow by 1.5% in 2015 and by 2.4% in 2016. Its 2014 GDP/capita was US$24,100. Kazakhstan has the largest GDP and GDP/capita of all of the Central Asian countries discussed here, although its 2014 GDP growth rate was the lowest. The Kazakhstan Tenge was devalued by 19% in February 2014 and in November 2014 the government announced a stimulus package to cope with the economic challenges linked to Russia's slowing economy and the weakening Russian Ruble.

Cement industry

Kazakhstan has eight active integrated cement plants with 11.85Mt/yr of cement capacity (Figure 5). This includes BaselCement's Sastobe White Cement plant, which has 350,000t/yr of white cement production capacity. There are another three integrated cement plants in the planning phase, all of which were announced in 2015. In addition, three cement plants are under construction with a combined capacity of 8.1Mt/yr.

In contrast with Azerbaijan, Kazakhstan has three prominent international cement producers, namely Italy's Italcementi, Germany's HeidelbergCement and China's Huaxin Cement, which is 39.9% owned by Holcim (now Lafarge-Holcim). Huaxin Cement is a major and growing player in many Central Asian countries. Kazakhstan's United Cement Group (UCG) also has cement industry interests in much of Central Asia and Russia, as well as the 1.2Mt/yr Semey Cement plant in Semey, Kazakhstan.

November 2014 saw Kazakhstan's President Nursultan Nazarbayev announce the start of the Nurly Zhol ('Bright Path') Programme, a new economic policy to launch massive state investment in infrastructure in the next few years. The programme is expected to steer the economy towards sustainable growth and provide a large boost to many sectors, including the cement industry.

In December 2014 Albert Rau, Vice Minister for Investments and Development, said that Kazakhstan intended to meet domestic cement demand soon. "Given that at the start of 2015, a 500,000t/yr cement plant will be launched in Rudny, 2Mt/yr of new capacity will be launched by Kokshe Cement, the BI Cement plant will be started and a number of cement plants in Shymkent are to be modernised, we are ready to meet domestic cement demand," said Rau. He added that Kazakhstan had imported more than 1Mt of cement in 2013. "Most of the issues are geographical. All the production facilities are concentrated in the east, in Karaganda and in the south. The west of Kazakhstan relies on imported cement." However, in October 2015 it emerged that the launch of the 500,000t/yr Rudny Cement plant had been delayed again due to problems and delays in obtaining financing.[4] Cement production was initially expected to start at the end of 2013. Since its inception, Rudny Cement's construction costs have increased by 37% to US$55.8m. No further updates regarding the other cement plants due for completion have been made.

Left - Figure 6: Heidelberg-Cement's 1.6Mt/yr Bukhtarma cement plant in Zyryanovsk, Kazakhstan may come to the attention of Kazakhstan's competition commission with Heidelberg-Cement's intended acquisition of Italcementi, which also has assets in the country.

Left- Figure 7: The 1.1Mt/yr Jambyl Cement plant in Mynaral, Kazakhstan, which is 60% owned by France's Vicat, plans to expands its capacity to 2.2Mt/yr with the addition of a new, duplicate cement line.

Cement consumption in Kazakhstan increased by 4% year-on-year to 8.5Mt in 2014. During the year, Kazakhstan's cement imports fell by 26% to 1.1Mt, while its exports grew by 150% to 500,000t. Domestic cement demand in 2015 was expected to increase by 3% year-on-year to 8.8Mt.

2014 was mixed for Kazakhstan's cement producers. Steppe Cement's cement production grew by 18% year-on-year to 1.61Mt/yr and its revenue grew by 7% to US$114m. However, the company swung to a US$8.1m pre-tax loss compared to a US$13m pre-tax profit in 2013. It said that its results were affected by the depreciation of the Kazakh Tenge and the Russian Ruble, lower cement prices and lower oil prices. Steppe Cement observed that these factors had, however, helped local producers to gain market share. Steppe Cement's market share increased from 17% in 2013 to 19% in 2014. Meanwhile, Italcementi's revenue in Kazakhstan fell by 21.1% year-on-year to US$41.4m in 2014, while its recurring earnings before interest, taxes, depreciation and amortisation (EBITDA) grew by 90% to US$3.19m.

Steppe Cement's cement sales volumes grew by 1.16% to 717,654t in the first half of 2015, but its cement sales fell by 9.2% to US$44.4m. In the third quarter of 2015, its revenue rose by 1.44% to US$28.2m and its sales volumes rose by 8% to 630,329t. For the first nine months of 2015, Steppe Cement's revenue fell by 4.27% to US$58.3m.

Cement plant projects

A significant number of new cement plant projects were announced in 2014-2015.

In December 2014 Italcementi won a US$21.2m loan from the European Bank for Reconstruction and Development (EBRD) to upgrade its 1.6Mt/yr cement plant in Shymkent. The EBRD also bought US$4.25m of shares, giving it a 21% stake in the plant. The financing will be used to convert the four existing wet-process cement lines to one energy-efficient 1.2Mt/yr dry-process line. The project is due for completion in 2016.

In March 2015 Semey Cement's production capacity was increased to 1Mt/yr. In the frame of the Nurly Zhol Programme, most of the cement will be utilised for road construction. The contracts for cement deliveries have already been signed.

In July 2015 International Cement Kazakhstan (ICK), an indirect wholly-owned subsidiary of Singapore's Compact Metal Industries, entered an agreement with Nurzhan Shakirov to establish a joint venture cement plant in Almaty, Kazakhstan. No further details have been released.

In September 2015 Kazakhstan's Vice Minister of Investment and Development, Albert Rau, met with the President of France's Vicat, Guy Sidos, and Honorary President of Vicat, Jacques Merceron-Vicat, to discuss the possible extension of the 1.1Mt/yr Zhambyl Cement plant, which is 60% owned by Vicat (Figure 7). The extension would see a new, duplicate line installed, doubling the plant's cement production capacity to 2.2Mt/yr. The meeting also announced the construction of a US$10m terminal in Astana in 2016. The terminal will act as a packing plant, research and testing centre.

In October 2015 China's Huaxin Cement said that it plans to build a 5Mt/yr dry-process cement plant in Kazakhstan. No further details were released. Construction of the US$111m plant was due to start at the end of 2015.

In November 2015 Gezhouba Cement Group said that it would construct a joint venture cement plant in Shiyeli, Kyzylorda with Corporation Dan Ake, to be called Gezhouba-Shiyeli Cement. Construction of the 1Mt/yr plant is due to begin in February 2016 and will create 400 jobs. Gezhouba Cement said that the region has created favourable conditions for investors and the implementation of joint venture projects.

HeidelbergCement's Italcementi acquisition

In July 2015, HeidelbergCement announced that it plans to acquire Italmobiliare's 45% stake in Italcementi for US$1.77bn. The transaction is subject to approval by competition authorities; to date, only India has approved the deal. Following the completion of the deal, which is due in the first half of 2016, HeidelbergCement will offer the same price for each share held by outstanding investors.

"With the market recovery gaining traction in southern Europe and the US, it is now the right time for us to accelerate our growth," said HeidelbergCement's CEO Bernd Scheifele. The deal will be paid for in cash and will be underwritten by Deutsche Bank and Morgan Stanley. Some of the financing will be repaid through asset sales, although none has yet been announced.

Kazakhstan is one of the six countries in which both HeidelbergCement and Italcementi operate. Combined, the companies have 4Mt/yr of cement production capacity from three cement plants, representing 33.8% of the market's capacity and 37.5% of the country's cement plants. It is possible that the deal could attract the attention of anti-competition authorities in Kazakhstan, although, as elsewhere, no asset sales have yet been stipulated.

Kyrgyzstan

Kyrgyzstan, with its population of 5.66 million 2015, is one of the poorer Central Asian countries discussed here.[1] The country has been blighted by major political disputes since gaining independence in 1991, although the situation appears to have stabilised under President Almazbek Sharshenovich Atambayev, who was elected in 2011. The Kyrgyzstan economy's major sectors are the agriculture and mineral extraction industries. Its main exports are

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cotton and tobacco. Its GDP grew by 3.6% in 2014 to US$19.2bn (PPP), the lowest in Central Asia, while its GDP/capita was US$3300. Its 2015 GDP growth estimate was 2% and is expected to hit 3.6% in 2016.[2]

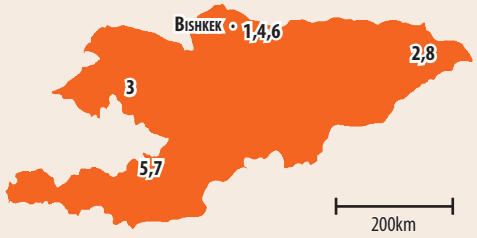
Cement Industry

Kyrgyzstan has five active integrated cement plants with 3.16Mt/yr of combined production capacity (Figure 8). There is also one plant under construction and two more in the planning stages, all of which were announced in the last two years.

According to the Ministry of Economy of the Kyrgyz Republic's '*Medium and long-term strategy of mining industry development of the Kyrgyz Republic*' report in 2014, Kyrgyzstan produces around 3Mt/yr of cement, enough to meet domestic market needs.[5] In 2014, Kyrgyzstan's cement production volumes grew by 25% year-on-year, breaking all previous records, although no figures were provided.[6] The same reports said that the country's inconsistent investment and political climate were prompting foreign investors to look elsewhere, notably to Tajikistan. "Unfortunately, whether due to conflicts with the local population or problems with licenses, very few projects reach the stage of completion in our country," said Askar Sydykov, Deputy Director of the International Business Council. Compared to Tajikistan, "Some Chinese companies have found it harder to operate within Kyrgyzstan's fractious semi-parliamentary political system, full of 'different interests'."

Kyrgyzstan **3.16Mt/yr**

1. Kant Cement (UCG), Kant Cement Plant, Chui	1.5Mt/yr
2. Kurmentinsky Cement, Kurmentinsky Plant, Kulskaya	0.1Mt/yr
3. South Kyrgyz Cement, Tashkumgyr Plant, Tashkumgyr	1Mt/yr
4. TechnoLin (UCG), Kant, Chui	0.36Mt/yr
5. Aravan Cement, Aravan, Osh	0.20Mt/yr
6. ZETH Cement, Kemin Plant, Chui	1Mt/yr (Under construction)
7. Gansu Qilianshan Cement, Osh Plant, Osh	Announced in 2015
8. Yatai Cement (Jinlong Group), Kulskaya	0.8Mt/yr (Announced in 2015)



Right - Figure 8: Integrated cement plants in Kyrgyzstan in 2015. **Source:** *The Global Cement Directory 2016.*

Cement plant projects

All three of Kyrgyzstan's new cement plant projects announced in the last two years were funded, at least partially, via foreign investments.

In August 2014, Shangfeng Cement's subsidiary Tongling Shangfeng Cement started a cement joint venture with Zhu Rongjun under the name Zeth Cement. Tongling Shangfeng holds 58% of the shares of the newly-formed company, while Zhu Rongjun owns the remaining 42% stake. Zhu Rongjun agreed to supply limestone mining rights and land-use rights that it owns or controls. A ground-breaking ceremony was held on 29 August 2014 at the site of the US$70m, 1Mt/yr cement plant in Kemin, Chui (Figure 9). Zeth Cement's General Manager, Zhu Rongjun, said that the plant would start production within 15 months.

In May 2015, Gansu Qilianshan Cement and 8th Metallurgical Corporation signed a memorandum for the joint construction of a US$130m cement plant in Osh with contractor JBK. The Chinese and Kyrgyzstan sides hold 80% and 20% of the project respectively.

In September 2015, China's Jinlong Group said that it plans to invest US$65m to build a 800,000t/yr single line cement plant in Issyk Kul. It will operate as a subsidiary called Yatai Cement. US$15m of the project funds will come from self-financing, while the remaining US$50m will be funded through project financing. Approximately 400 workers will be hired to work at the new firm, which has a 30-year operation term.

Right - Figure 9: Kyrgyzstan's First Vice Prime Minister Tayirbek Sarpashev (far left) and Business Counsellor with the Chinese Embassy in Kyrgyzstan, Sun He (third from the right), attended the ground-breaking ceremony of the Zeth Cement plant in Kemin, Chui, Kyrgyzstan on 29 August 2014. **Source:** *http://news.xinhuanet.com/english/china/2014-08/30/c_133606828.htm*

Right - Figure 10: The 1Mt/yr South Kyrgyz Cement plant in Tashkumgyr, Kyrgyzstan was the first China-Kyrgyz cooperation project using the preferential buyer's credit, provided by the Chinese government in the framework of Shanghai Cooperation Organisation. **Source:** *http://www.camce.com.cn/en/enBA/enEC/enIP/201503/t20150310_57521.htm*

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Tajikistan

Tajikistan had a population of 8.19 million in 2015. Its GDP/capita was US$2700 in 2014, the lowest in Central Asia. The country's economy remains weak due to 'the uneven implementation of structural reforms, corruption, weak governance, seasonal power shortages and a large external debt burden.'[1] Its GDP grew by 6.7% to US$22.4bn (PPP) in 2014 and was expected to grow by 3% in 2015 and 3.4% in 2016.[2] Tajikistan's economy is dependent on cotton, aluminium and, according to several resources, narcotics trading.

Cement industry

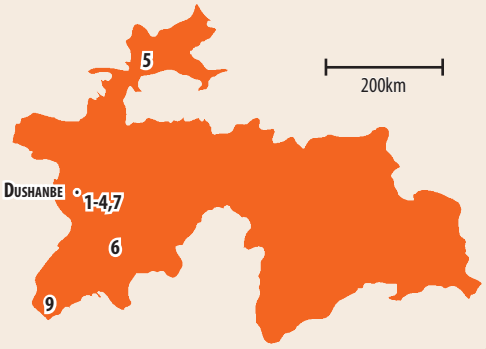
Tajikistan has two active integrated cement plants with 2.1Mt/yr of combined cement production capacity (Figure 11). This is the lowest number and smallest combined capacity in Central Asia, although another seven integrated plants are in the planning or construction phases. There is also a 1.2Mt/yr grinding plant in Vahdat, which is operated by Toj-China.

In 2014, Tajikistan produced 1.15Mt of cement, some 190% more than the 385,000t it made in 2013.[7-8] Huaxin Gayur Cement produced 865,000t or 75.2% of the total in 2014, up from 287,000t or 74.5% in 2013. The increased cement production that resulted from the commissioning of the Huaxin Gayur Cement plant in 2013 reportedly prompted a fall in cement prices from US$180/t to US$120/t. According to local media, Tajikistan's cement demand has sharply increased recently in connection with construction of the Roghun hydroelectric power plant, highways and other infrastructure.

In September 2015, Tajikistan's Ministry of Economic Development and Trade announced that the country would increase its cement capacity to start exports by 2020. At the time, there were six cement plants under construction, which would more than cover its domestic needs. Cement plants are planned for construction in Dangara, Bobokon, Isfara and Istiklol City. By improving the country's cement sector, Tajikistan expects to become a net cement exporter. Previously, Tajikistan had imported large quantities of cement from Pakistan, Iran and China.

Tajikistan **2.1Mt/yr**

1. Tajikcement, Dushanbe Plant, Dushanbe	1.1Mt/yr
2. Huaxin Gayur Cement, Yovon Plant	1Mt/yr
3. Chjuntsay-Taboshar Cement (Huaxin Cement / Gajur Cement), Ghafur, Vahdat	0.6Mt/yr (Due in 2016)
4. Vahdat Cement, Vahdat	0.5Mt/yr (Announced in 2014)
5. Huaxin Cement, Ghafurov, Sughd	1Mt/yr (Announced in 2015)
6. Huaxin Cement, Dangara	1.2Mt/yr (Announced in 2015)
7. Chzhungtsai Mohir Cement, Yovon, Khatlon	1.2Mt/yr (Announced in 2015)
8. Shanfeng Cement	1.2Mt/yr (Announced in 2015)
9. Government, Shaartuz, Khatlon	1Mt/yr (Announced in 2015)



Right - Figure 11: Integrated cement plants in Tajikistan in 2015. **Source:** *The Global Cement Directory 2016.*

Cement plant projects

There were five new cement plant projects announced in 2015, which, if they are all completed, would provide an additional 5.6Mt/yr of production capacity.

In February 2015 Tajikistan's government made an agreement with China's Huaxin Cement for the construction of two new cement plants, including a 1Mt/yr plant in Ghafurov, Sughd and a 1.2Mt/yr plant in Dangara. Tajikistan will possess a 30% stake in the Ghafurov plant and a 45% stake in the Dangara plant.

China's Shangfeng Cement announced plans to raise US$240m through a non-public share offering in September 2015, partly to fund investments in Central Asia. In Tajikistan, it will invest US$130m in a 1.2Mt/yr capacity cement plant, due for completion in 18 months. The cement will be sold to southern and central Tajikistan, Uzbekistan and northern cities in Afghanistan.

Also in September 2015, President Emomali Rahmon officially opened the US$30m, 1.2Mt/yr 'Toj-China' grinding plant in Chormaghzak Pass, Vahdat. The plant, which has two 600,000t/yr production lines, is a joint venture between Tajikistan and China. Under the law passed by Tajikistan's lower house of parliament (Majlisi Namoyandagon) on 12 November 2014, Toj-China was exempted from paying value added tax (VAT) and customs duties of US$4.6m on equipment shipments for the plant construction.

Later in 2015, local media reported that Tajikistan's government signed an investment agreement for the construction of a 1.2Mt/yr cement plant, a cement sack

Right - Figure 12: The 1.1Mt/yr Tajikcement plant in Dushanbe, Tajikistan. **Source:** *http://emagazine.european-times.com/tajikistan/industry-and-construction-tajikcement-transforming-tajik-raw-materials-into-world-class-cement*

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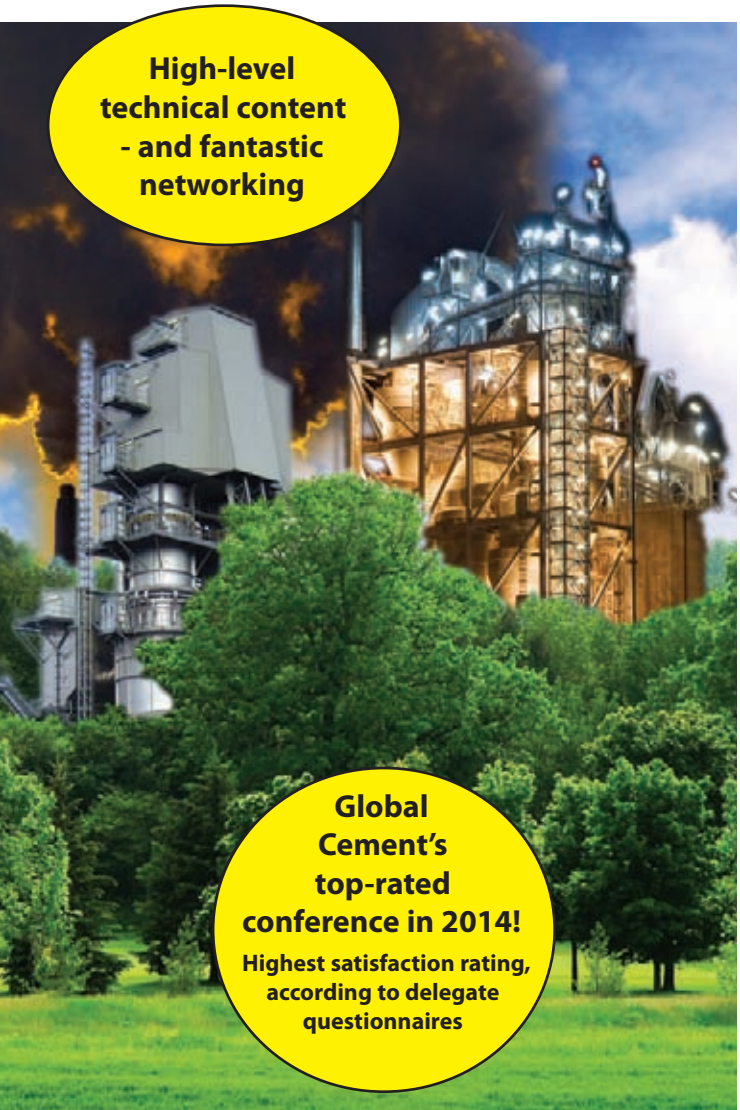

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- Very good technical topics
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- Genial environment allowed for easy introduction to attendees
- Good atmosphere, excellent technical contents
- Great job from all members of the EnviroCem team
- Congratulations, it was a good conference
- Very friendly and helpful organising team

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Right - Figure 13: Polimeks' 1.4Mt/yr capacity Garlyk cement plant in Lebap is Turkmenistan's newest cement plant.

production plant and a gypsum wallboard plant in Yovon, Khatlon for a combined cost of US$145m.[9]

In December 2015, the government of Tajikistan announced that it was looking for investors for the construction of a US$350m, 1Mt/yr cement plant near the Tuyun-Tao limestone deposit in Shaartuz, Khatlon. The project is included in the government's investment portfolio for implementation through direct investments. Russian, Iranian and Chinese companies have all expressed interest. In 2012, China's CNBM prepared a feasibility study for the project, but it was not implemented due to its high cost and the absence of infrastructure.

Turkmenistan

Tajikistan's population of 5.23 million has been ruled by President Gurbanguly Mälikgulyýewiç Berdimuhamedow since 2007.[1] It is widely considered an inefficient authoritarian regime with numerous bureaucratic obstacles that impede business activity. According to the CIA World Factbook, the country's outlook is poor due to 'endemic corruption, a poor educational system, government misuse of oil and gas revenues and a reluctance to adopt market-oriented reforms.' The majority of Turkmenistan's economic statistics are state secrets. GDP numbers and other statistics that the government makes public are subject to wide margins of error. The country's GDP grew by 10.3% to US$47.9bn (PPP) in 2014 and was expected to grow by 8.5% in 2015 and 8.9% in 2016.[2] Its GDP/capita was US$14,200 in 2014. The major exports of Turkmenistan are cotton and gas.

Cement Industry

Turkmenistan has four active integrated cement plants with 4.65Mt/yr of total cement production capacity (Figure 14). Two of the four plants are owned by state-owned Turkmencement, while the other two plants are owned by Turkish construction materials group Polimeks, which produces Ordinary Portland Cement (OPC), oil well cement and sulphate-resistant cement (Figure 13). According to the USGS, in 2013 Turkmenistan's cement production grew by 12% year-on-year to 2.65Mt, up from 2.37Mt in 2012 and 1.95Mt in 2011.[10]

Daishiro Yamagiwa, Japan's State Minister of Economy, Trade and Industry, said in July 2015 that Japan wished to pursue further cooperation in Turkmenistan, including the potential construction of a new cement plant.[11] "Turkmenistan is steadily showing high economic growth," said Yamagiwa. "The country is rich in natural resources." No further details have yet been announced.

In December 2014 Turkmencement announced plans to build a new 1Mt/yr cement plant in Koytendag, Lebap. Railway infrastructure has already been established in the region to support the project.

Turkmenistan — **4.65Mt/yr**

1. Turkmencement, Kelete Plant, Kelete	1.25Mt/yr
2. Turkmencement, Bezmeinskiy Plant, Bezmein	1Mt/yr
3. Polimeks, Jebel Plant, Jebel	1Mt/yr
4. Polimeks, Garlyk Plant, Lebap	1.4Mt/yr
5. Turkmencement, Koytendag Plant, Lebap	1Mt/yr
	(Announced in 2014)

Right - Figure 14: Integrated cement plants in Turkmenistan in 2015. **Source:** *The Global Cement Directory 2016.*

The new plant is part of the country's *'Programme for Development of Construction and Industrial Sectors in 2012-2016,'* which is designed to modernise the country's building materials industries.

Turkmenistan is the only country in Central Asia with no foreign investment cement plants planned.

Uzbekistan

Uzbekistan is one of the most-populous Central Asian countries with 29.2 million inhabitants in 2015.[1] The country's growth has been driven by state-led investments and exports. It recently started exporting gas to China and has since seen growing levels of Chinese investment. Its GDP grew by 8.1% to US$172bn (PPP) in 2014 and was expected to grow by 6.8% in 2015 and 7% in 2016.[2] Its GDP/capita was US$5600 in 2014. Uzbekistan exports large amounts of natural gas, cotton and gold.

Cement industry

Uzbekistan has nine active integrated cement plants, the largest number in Central Asia, with a combined cement production capacity of 7.6Mt/yr (Figure 15). There is also a 1Mt/yr grinding plant in Tashkent operated by UCG.

Until recently, Uzbekistan's construction materials industry was state-owned under Uzstroymaterialy, its construction materials company. In 1997, Uzstroymaterialy became a joint-stock company and stakes in many of its cement plants were sold. Uzbekistan recently launched a new wave of privatisations with the publication of a list of 1200 companies that it planned to privatise in accordance with the April 2015 decree of the President of Uzbekistan *'On measures to increase the share and the value of private property in the economy.'* The list included the 3.08Mt/yr capacity Qizilqumsement plant, the largest in the country (Figure 16). In November 2015, Germany's HeidelbergCement announced plans to acquire a 35.9% stake in Qizilqumsement from Uzstroymaterialy.[12] Currently, Uzstroymaterialy holds an 86.92% stake and minority investors hold the remaining 13.08% of shares. The HeidelbergCement acquisition would leave Uzstroymaterialy with a 51% stake.

The State Statistics Committee of the Republic of Uzbekistan said that, in the first six months of 2015, construction materials production grew by 11.3% year-on-year to 2.11Mt. Compared with the first half of 2014, large enterprises in Uzbekistan increased their production of OPC by 113%, gypsum by 108%, lime by 135%, non-refractory ceramic building bricks by 116% and fibre cement by 118%. Meanwhile, Ahangarancement achieved record production figures in August 2015. The plant produced 164,000t of cement from 127,205t of clinker in August 2015, year-on-year rises of 2.5% and 12.2%, respectively. Ahagarancement shipped 164,863t of cement to consumers in August 2015, a 1.2% year-on-year rise.

Cement production in Uzbekistan was expected to grow from 7.5Mt/yr in 2014 to 7.9Mt/yr in 2015 and to 8.9Mt/yr by 2019. Within a programme of structural reforms, several cement plants will be modernised in 2015-2019. Qizilqumsement will invest US$30.7m to update equipment, while Bekabadcement will invest US$5.5m to modernise its milling technology.

In November 2015, Erkin Akramov, Chairman of the Board of Uzstroymaterialy, said that Uzbekistan's cement plants had been unable to meet domestic cement demand for several years.[13] "At present, the existing facilities do not satisfy the demand of the market," said Akramov. He added that the share of construction and installation works in GDP had increased from 9.3% in 2004 to 11.9% in 2014.

Cement plant projects

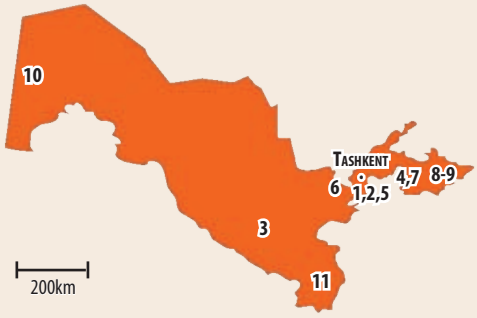
Several new cement plant projects were announced in 2015, including, as for most of Central Asia, multiple foreign investments.

In July 2015 Almalyk Mining and Metallurgy Complex (AMMC) announced that it plans to expand the 750,000t/yr grey cement production of its cement plant in Zafarabad, Jizzakh to 1Mt/yr (Figure 17).[14] The plant produced 155,000t of cement in 2014. Around 70% of its products are exported.

China's Shangfeng Cement said in September 2015 that it would invest US$137m to build a 1.2Mt/yr cement plant in Uzbekistan. It plans to sell the cement to eastern Uzbekistan, southern Kyrgyzstan and northern Tajikistan.

Uzbekistan **7.60Mt/yr**

1. Akhangarancement (Eurocement), Tashkent	1.98Mt/yr
2. Bekabadcement (UCG) Plant, Bekabadcement, Tashkent	0.08Mt/yr
3. Qizilqumsement, Krzylkumcement Plant, Bukhara	3.08Mt/yr
4. Kuvasaycement, Kuvasay, Fergana	0.92Mt/yr
5. Uzqurillishmateriallari, UZ-Angren Building Materials Plant, Tashkent	0.15Mt/yr
6. Almalyk Mining and Metallurgical Complex (AMMC), Jizzakh	0.75Mt/yr grey cement (Expansion to 1Mt/yr planned) 0.35Mt/yr white cement
7. Quvasaycement (UCG), Fergana	0.15Mt/yr
8. SingLida, Ahtachi, Andijan	0.12Mt/yr (Expansion to 0.24Mt/yr planned)
9. Keer, Andijan	0.02Mt/yr
10. Karakalpak Cement, Karakalpakstan	0.4Mt/yr (Due in 2016)
11. Almalyk Mining and Metallurgical Complex (AMMC), Surkhandarya	1.5Mt/yr (Due in 2017)
12. Shangfeng Cement	1.2Mt/yr (Announced in 2015)



Right - Figure 15: Integrated cement plants in Uzbekistan in 2015. **Source:** *The Global Cement Directory 2016.*

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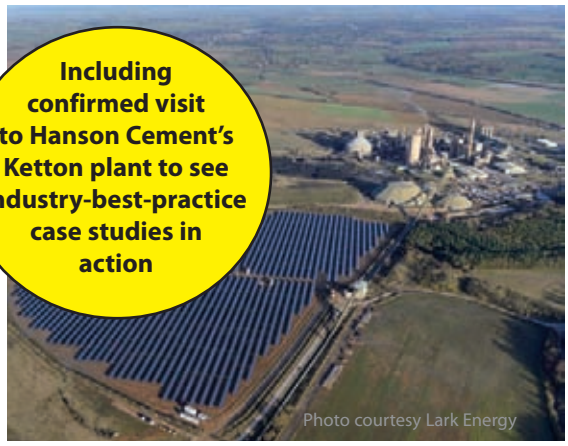

Including confirmed visit to Hanson Cement's Ketton plant to see industry-best-practice case studies in action

Photo courtesy Lark Energy

Outline conference programme

First day

Day theme: Process efficiency in a competitive market

Session 1: Global trends in cement supply and demand

Session 2: Process optimisation in the cement industry

18.00 Social evening

Second day

Day theme: Maximising production in a sold-out market

Session 3: Trouble-shooting case-studies from the global cement industry

Session 4: Maximising cement production

Session 5: De-bottlenecking for production maximisation

18.00 Farewell party

Third day

Field trip to Hanson Cement's Ketton cement plant

Photo courtesy Loesche

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Right - Figure 16: The 3.08Mt/yr Qizilqumsement plant in Bukhara, Uzbekistan, is the largest in the country.

Right - Figure 17: The AMMC cement plant in Jizzakh, Uzbekistan, which has 750,000t/yr of grey cement and 350,000t/yr of white cement capacity, plans to expand its grey cement production capacity to 1Mt/yr in the near future.

In November 2015, Turkey's Dal Engineering Group and AMMC agreed to build a 1.5Mt/yr, US$225m cement plant in Surkhandarya, which is due to start production late in 2017. It will potentially be financed by a US$90m loan from the Fund for Reconstruction and Development of Uzbekistan, US$110m of commercial bank loans and the US$24.4m equity of AMMC.

Troubles at Akhangarancement

In July 2014, the Tashkent Regional Economic Court seized the assets and bank accounts of Akhangarancement. This amounted to US$177.8m of cash and US$19.1m of fixed assets. The move followed a suit brought by the Uzbekistan State Competition Committee on 21 July 2014 regarding Akhangarancement's privatisation in 1994. Eurocement, which became a shareholder of Akhangarancement eight years after it was privatised when it bought 75.5% of its shares in 2006, said that it would appeal the decision. If Eurocement loses the case, Akhangarancement will be re-nationalised. In September 2014 the Board of Appeals of Tashkent Regional Economic Court postponed the consideration of the case. Eurocement requested extra time to sign a settlement with the State Committee of Uzbekistan. No further updates have been released.

In other news, in October 2015 the Higher Economic Court of Uzbekistan upheld a penalty tax on the excess profit of Akhangarancement for 2009-2014 and penalties for its late payment. Akhangarancement said that it would appeal the decision because it had calculated the excess profit tax in accordance with the country's laws. It added that the calculation had been confirmed as correct by the Ministry of Finance and the Expert Council at the State Tax Committee. "The decision changes the legal practice on issues of the formation of profits of cement companies, significantly encumbers the plant with an additional tax burden, leads to a reduction of investment opportunities and jeopardises the implementation of the plant modernisation project," said Akhangarancement.

Below - Table 1: The 2014 GDP, 2014 GDP growth rates (and projections for 2015-2016), 2014 GDP/capita, 2015 population, active integrated cement plants and active cement production capacity of the Central Asian countries. **Sources:** *The Global Cement Directory 2016*, CIA World Factbook, IMF World Economic Outlook (October 2015 update).

Country	GDP (US$bn)	GDP growth (%)			GDP/capita (US$)	Population	Plants	Cement capacity (Mt/yr)
		2014	2015	2016				
Azerbaijan	166	2.8	4.0	2.5	17,800	9.78 million	3	4.70
Kazakhstan	420	1.5	1.5	2.4	24,100	18.2 million	8	11.85
Kyrgyzstan	19.2	3.6	2.0	3.6	3300	5.66 million	5	3.16
Tajikistan	22.4	6.7	3.0	3.4	2700	8.19 million	2	2.10
Turkmenistan	47.9	10.3	8.5	8.9	14,200	5.23 million	4	4.65
Uzbekistan	172	8.1	6.8	7.0	5600	29.2 million	9	7.60

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Qatar: Al Khalij Cement adds new duplicate cement line

Al Khalij Cement Company has added a duplicate production line to increase its total cement production capacity to 15,500t/day, which will help Qatar to meet the rising cement demand in view of the strategic infrastructure projects being undertaken ahead of the 2022 FIFA World Cup.

"We are now the largest producer of Ordinary Portland Cement in Qatar," said Al Khalij Cement Company's Managing Director, Faisal bin Abdullah al-Mana. Highlighting that the estimated total cement demand in Qatar is 20,000-22,000t/day, al-Mana said that, with the addition of new production capacity from Al Khalij, the country will be able to meet the growing demand domestically.

In 2013, Denmark's FLSmidth won a US$95.9m order for the supply of a cement production line for Al Khalij's plant in Umm Bab. The production line is identical to the existing line, which was supplied by FLSmidth in 2007. The strategy to have identical production lines, according to al-Mana, will make the maintenance and sourcing of spare parts easier.

Algeria: Lafarge Algeria's new cement plant to start production in 2016

A US$277m joint venture cement plant between Lafarge Algeria (51%) and Algeria's Souakri (49%) will start operations in Biskra in 2016.

The Director of Public Affairs and Communications at Lafarge Algeria, Serge Dubois, said that the 2.7Mt/yr plant will raise the group's domestic production to more than 11Mt/yr. Lafarge Algeria currently has two cement plants in M'sila and Oggaz with 8.7Mt/yr of capacity. It also holds the 1Mt/yr Meftah cement plant in partnership with Algeria (GICA).

Morocco: Italcementi and Grupo Puma to launch joint plant in Morocco

Spanish mortar producer Grupo Puma and Italcementi have signed an agreement for the construction of a plant in Morocco. The companies have set up a joint venture named Meastro Drymix, which will distribute mortar products in Morocco. Meastro Drymix was incorporated in May 2015 by FYM, Italcementi's Spanish subsidiary, and Grupo Puma.

Turkey: Çimsa Çimento orders three new Gebr. Pfeiffer mills

Çimsa Çimento has ordered three MVR roller mills from Gebr. Pfeiffer for the modernisation of its cement plants in Eskişehir and Niğde.

Two mills will be set up as part of the dual-stream white and grey cement production line at Çimsa Çimento's Eskişehir plant. An MVR 3750 R-3 type raw mill with a drive power of 2000kW can be used flexibly to grind 120t/hr of white cement raw material to a product fineness of 4% R 0.090mm or 200t/hr of grey cement raw material to a product fineness of 12% R 0.090mm. An MVR 5000 C-4 type cement mill with a drive power of 4000kW will produce 160t/hr of Ordinary Portland Cement with a specific surface of 3500cm^2/g or 100t/hr of white cement with a specific surface of 4800cm^2/g according to Blaine.

The modernisation of the Niğde plant will also see an MVR 3750 R-3 type raw mill installed, which will be largely identical to the raw mill at the Eskişehir plant. This mill is guaranteed to attain 200t/hr at a product fineness of 12% R 0.090mm. The ability to quickly swing the grinding rollers out of the mill by using the installed hydraulic system, without having to fit an additional hydraulic cylinder, played a key role in Çimsa Çimento's decision to invest in MVR mills from Gebr. Pfeiffer. This concept ensures the shortest possible downtime when the wear parts of the grinding rollers and grinding plate are replaced. In addition, no additional silo capacities are required to bridge the downtime for changing the wear parts.

Saudi Arabia: thyssenkrupp wins contract

Germany's thyssenkrupp has won a contract with Yamama Saudi Cement Company to build two turnkey cement clinker production lines.

The two lines, with a combined cement capacity of 20,000t/day, will be built at a new site around 80km east of the capital city, Riyadh. The value of the contract is in the high three-digit million Euro range and remains undisclosed. It is the largest cement contract ever secured by thyssenkrupp.

Jens Michael Wegmann, CEO of the Industrial Solutions business area of thyssenkrupp, said, "Our partnership with Yamama dates back many decades. We are delighted that Yamama is once again putting its faith in our comprehensive experience in the turnkey construction of complete cement plants worldwide."

The main components include two 1800t/hr mobile primary crushers for limestone, three 500t/hr crushers for additives, two 100t/hr crushers for correctives and two 80,000t circular blending beds for limestone and various additive storage facilities. Four 425t/hr Quadropol QMR2 roller mills and two 35,000t capacity homogenising silos will grind and store the raw material.

The kiln lines comprise six-stage and two-string preheaters with a Prepol AS-MSC calciner, rotary kilns with Polflame-VN clinkering zone burners and Polytrack clinker coolers. The clinker will be stored in three 10,000t capacity clinker silos and two 100,000t capacity clinker storage facilities. Four combi-grinding units consisting of Polycom high-pressure grinding rolls, ball mills and Sepol separators, as well as downstream cement coolers, will each produce 300t/hr of cement.

The cement will be stored in six 25,000t cement silos. The line will also feature six cement packing and loading stations. Quality control and monitoring will be handled by a Polcid process control system and Polab laboratory automation system.

News in brief

Nigeria: Dangote donates tools

Dangote Cement has donated tools to artisans around Unity Road junction in Ikeja, Lagos, as part of efforts to enable them to deliver better jobs. The artisans, who usually gather at the junction waiting to be hired by contractors, included bricklayers, plumbers, block moulders and concrete mixers.

Ghana: Ghacem wins award

Ghacem has been judged as the best overall industrial company of 2015 at the 4th Association of Ghana Industries (AGI) Awards. It was also judged as the best company in the metals, building and construction sector. The citation accompanying the award paid tribute to the company's 'sterling contributions to the economy.'

Egypt: Sinai Cement reports US$6.78m net loss

Sinai Cement incurred a US$6.78m net loss in the first nine months of 2015 compared to a US$11.6m net profit in the same period of 2014.

Nigeria: Dangote plans 500MW power plant in Kano

Dangote Group has concluded the preliminary arrangements to build a 500MW power plant to provide electricity to the national grid in Kano. The electricity project would also benefit Jigawa, Katsina and some parts of Kaduna state.

UAE: False dust emission rumours from RAK plant

The Ministry of Environment and Water has quashed dust emission rumours from Gulf Cement in Ras Al Khaimah. The rumours circulated on social media with pictures of the plant's fumes. The ministry team monitored the emissions, which turned out to be steam caused by the suspension of production.

Nigeria: Lafarge invests in community development

Lafarge Africa spent over US$502,767 on various developmental projects covering education, infrastructure, health and empowerment, among others, in 12 communities in Ewekoro, Ogun in 2015.

Ghana: Dangote Cement 'killing local producers'

A protest was held between the streets of Denu and the Aflao Customs Park in December 2015 against the import of bagged cement from Dangote Cement in Nigeria. The protesters said that the imports were harming domestic suppliers, including Diamond Cement and Ghacem. They called on President John Dramani Mahama to intervene.

In a petition to the President and copied to the Volta Regional Minister, the Member of Parliament (MP) for the area and the Municipal Chief Executive, the protestors said that the imports were 'dangerous economic sabotage.' The spokesperson for the group, Mengistu Agorbia, said that the influx of Dangote Cement had resulted in low patronage of Diamond Cement, causing the company to lose about 40% of its income, while Dangote had reported huge profits, citing the import of its cement to Ghana as the main driving force. He said that if the trend continued, Diamond Cement employees would be laid off.

He called on the President, who has been an ambassador for made-in-Ghana goods, to protect local industries by directing the Minister of Trade and Industry to investigate. "We are reminding the President of his promise to create jobs for the youth," said Agorbia. Dangote Cement has operated in Ghana since 2010, importing and bagging bulk cement at its terminal in Tema for sale to the domestic market. It had reportedly promised to upgrade its terminal so that it could efficiently handle 1Mt/yr of bulk cement, as well as build a 1.5Mt/yr grinding plant in Takoradi in 2016 to grind clinker from Nigeria. "However, in recent times Aflao has been inundated with over 1000 trailer trucks loaded with bagged Dangote Cement from Nigeria, flooding the market with cheap cement," said Agorbia.

Kenya: Mombasa Cement land grab investigated

A controversial land acquisition by Mombasa Cement could be the start of tough times ahead for National Land Commission Chairperson Muhammad Swazuri. The National Assembly Lands Committee wants Swazuri enjoined in investigations into how Mombasa Cement acquired 4.95km^2 of land in Kilifi.

On 24 November 2015, the committee tabled a report that declared that Mombasa Cement had illegally acquired the land. MPs have recommended that the Directorate of Criminal Investigations and the Ethics and Anti-Corruption Commission investigate Swazuri and a senior Lands Ministry Official over abuse of office. They have claimed that Swazuri has been blocking an investigation into how some Kilifi residents lost their land to Mombasa Cement.

Zambia: Dangote and Zambezi file lawsuits

Dangote Industries Zambia has filed a lawsuit against Zambezi Portland Cement seeking to back out of a paid transaction for cement. Zambezi has filed a counter lawsuit against Dangote that disputes its claim and points to the rights of the contract.

One year ago, when Dangote was building its cement plant, it agreed to purchase 990t of cement from Zambezi, although the deal was made under the previous illegal management of Rajan Mahtani, who has since been removed from management. Now, according to the lawsuit, Dangote wants the money to be returned instead of taking the cement that it bought.

According to the counter-lawsuit, Zambezi claimed that it has fully-honoured its contractual commitments, supplied all the cement to Dangote that was paid for and is awaiting collection of the product.

Egypt: Qalaa Holdings' net loss rose to US$16m in the third quarter of 2015

Qalaa Holdings' revenue grew by 19% year-on-year to US$262m in the third quarter of 2015. In the first nine months of 2015, its revenue rose by 31% to US$777m. The growth was attributed to ASEC Cement and energy distribution business TAQA Arabia. ASEC Holding saw its top line grow by 30% to US$299m.

Earnings before interest, taxes, depreciation and amortisation (EBITDA) for the third quarter of 2015 fell by 9% to US$27.4m. The decrease was due to several factors; Qalaa's exit from Misr Cement Qena, which had been positively contributing to EBITDA; the third quarter of 2015 having two Eid Holidays (Eid El Fitr and Eid El Adha) leading to fewer working days; and Sudan's Al-Takamol facing temporary fuel shortages during the third quarter of 2015. In the first nine months of 2015, Qalaa's EBITDA grew by 71% to US$99.5m.

Qalaa has continued to press forward with its strategy of divesting non-core investments, with several exits concluded during the first nine months of 2015 and more recently in the fourth quarter of 2015. In the second quarter of 2015, Qalaa concluded the sale of its 27.5% stake in Misr Cement Qena, while in the fourth quarter of 2015, the company further reduced its exposure to the cement industry with its business unit ASEC Cement divesting its stakes in subsidiaries ASEC Minya Cement and ASEC Ready Mix.

"We are pressing ahead with plans to divest assets that will allow us to deleverage and devote maximum attention to high-growth businesses in sectors that are vital to the development of our region such as refining, energy distribution and transportation and logistics," said Qalaa Holdings Chairman and Founder, Ahmed Heikal. "We remain firmly committed to growing our investments in ERC, Egypt's largest in-progress private-sector megaproject due to begin production in 2017, and TAQA Arabia, which is pursuing exciting new opportunities in gas distribution, electricity generation and renewable energy. In parallel, we are also looking for opportunities to unlock shareholder value at subsidiaries, including ASCOM and Rift Valley Railways, which have strong growth outlooks."

"The sale of ASEC Cement's Egyptian assets alongside other transactions will fundamentally re-shape Qalaa's financials, giving more weight on both our income statement and balance sheet to ongoing operations at our energy and mining units and setting the stage for the transformative impact of ERC," said Qalaa Holdings Co-Founder and Managing Director, Hisham El-Khazindar. "The near-full impact of the substantial deleveraging that accompanies these transactions will be felt in our fourth quarter 2015 and first quarter 2016 financials."

The company reported a net loss after tax and minority interest of US$16m in the third quarter of 2015, a two-fold increase compared to the net loss of US$7.59m in the same period of 2014. On a nine month basis, however, bottom-line losses narrowed by 31% to US$41.2m compared to US$60m in the same period of 2014

Iran: Cold causes a halt to gas supplies

The National Iranian Gas Company has stopped supplying gas to several cement plants due to a wave of cold weather sweeping the country.

As gas consumption has peaked in the recent cold days, some cement plants, including those in the west, have stopped receiving gas, according to Abdolreza Sheikhan, the Secretary of Iran's Cement Association. The plants cannot use the heavy fuel oil mazut either because a government law to provide the plants with mazut at the same price as gas has not been implemented. Although cement plants store enough mazut to run for 7-10 days, they are not using their reserves as they are not sure if they will receive mazut as the law has stipulated.

Sheikhan said that, when the plants stopped working for 20 days under similar circumstances in 2014, the Oil Ministry refused to pay them from the income it had made by economising on gas.

North Africa: DI MATTEO delivers heavy duty apron conveyor for raw material

DI MATTEO has delivered a new heavy duty apron conveyor for a cement plant in North Africa. The conveyor is suitable for heavy duty applications with a bunker load in excess of 150t. It is suitable for raw materials up to 200mm in particle size. The cell width is greater than 2200mm. The 30t conveyor took 14 weeks from ordering to delivery.

The apron conveyor, for raw material up to 200mm particle size, that DI MATTEO delivered to a cement plant client in North Africa.

Here ***Global Cement Magazine*** presents its monthly review of global cement prices, in US$ for easy comparison. Much more price information (including the latest information on prices and market trends throughout the global cement industry from our price correspondents) is only available to subscribers of ***Global Cement Magazine***.

To get additional prices, you should subscribe - **See page 64**. In this issue subscribers receive information from Kenya, India, Egypt, Thailand and Malawi.

Algeria: The Trade Ministry of Algeria has said that building materials import prices, including cement, fell by 20% year-on-year in the first nine months of 2015.

Malaysia: CMS Cement has announced that it will adjust its cement prices upwards by an average of 4.6%, effective from 1 January 2016. CMS said that it will increase prices to 'maintain the quality of its cement manufacturing and supply businesses.' It added that the sustained depreciation of the Malaysian Ringgit since January 2015 had created an unprecedented increase in the cost of cement production, as over 60% of the key raw materials used to make cement, including its clinker and gypsum, are bought in US Dollars. The equipment and spare parts for machinery and all shipping costs are also Dollar-denominated.

As of the middle of November 2015, the Ringgit had recorded a 24.8% year-to-date loss, and a 30.9% depreciation compared to the same period of 2014. CMS said that the steep decline resulted in major increases in raw material prices in early 2015. Cement demand remains strong and CMS Cement is the sole cement producer in Sarawak.

"Our commitment is to the state's growth and in order for us to achieve this vision, tough but essential measures need to be implemented. At group level, we have absorbed the significant impact of the unfavourable foreign exchange rate since the beginning of the year. Various strategic measures have been implemented to control our production costs, however the increase in costs due to the major decline in the Ringgit has seriously impacted the cement division and the group's profitability. If continued, this will not allow us to fulfil our long term commitment to the growth of the state," said CMS's Datuk Richard Curtis.

Japan: Japanese cement producers are turning to exports to compensate for sluggish domestic demand. The latest numbers suggest their strategy is paying off. "Japan's cement exports are growing," said Akira Fujisue, a senior official of the Japan Cement Association.

Cement sales in Japan are falling amid a slowdown in public works projects. The Japan Cement Association now estimates domestic demand at 44-45Mt for the 2015 fiscal year, down from a previous estimate of 46Mt. This would mark the second consecutive year-on-year fall. Construction companies have also been shifting to building methods that require less cement, shrinking the market further. The bleak outlook at home is spurring cement makers, which have been exporting around 15% of their output, to try to ramp up exports.

Cement exports in October 2015 surged by 58% year-on-year to 871,000t, partly due to a decrease in cement production in the same period of 2014 while cement plants were being refurbished. Thanks to increased demand in Asia, the Japan Cement Association estimates that exports in its 2015 fiscal year, which ends in March 2016, will rise by 6% to 10Mt. Shipments to Singapore, in particular, have risen because of highway construction there. Demand in Hong Kong is robust as subways and highways are being built.

Strong demand is keeping export prices high. Major Japanese cement producers and Asian buyers have negotiated export prices of US$40-45/t for fiscal 2015, on FOB terms. That price level is roughly the same as for 2014.

Prices are for cement in metric tonnes, unless stated otherwise. Where a source has given a range, the published price is the minimum value.

FOB {+ the named port of origin} = Free On Board: The delivery of goods on board the vessel at the named port of origin (loading), at seller's expense. Buyer is responsible for the main carriage/freight, cargo insurance and other costs and risks.

CIF {+ the named port of destination} = Cost, Insurance and Freight: The cargo insurance and delivery of goods to the named port of destination (discharge) at the seller's expense. Buyer is responsible for the import customs clearance and other costs and risks.

ASWP = Any safe world port.

Conversions to US$ from local currencies are as at the time of original publication.

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Will the COP 21 have any noticeable influence on global greenhouse gas emissions? Probably not while the biggest polluters are ignored...

Amy Saunders Deputy Editor, ***Global Cement Magazine (amy.saunders@propubs.com)***

World leaders, environmentalists and journalists everywhere have been celebrating extra hard in recent days. December 2015 saw two weeks of negotiations at the United Nations Climate Change Conference (COP 21) in Paris. At the end of the event, the final agreement, a mix of mandatory and voluntary statements that apply to almost 200 countries, were agreed. These included:

- To peak greenhouse gas emissions as soon as possible and achieve a balance between sources and sinks of greenhouse gases in the second half of this century;
- To keep global temperature growth 'well below' 2°C and to pursue efforts to limit it to 1.5°C;
- To review progress every five years;
- To provide US$100bn/yr in climate finance to developing countries by 2020, with a commitment to further finance in the future.

At COP 21, the global cement industry reaffirmed its commitment to help tackle climate change by releasing a set of action plans to reduce CO_2 emissions by 1000Mt by 2030, compared to business as usual. "Cement production accounts for approximately 5% of worldwide man-made CO_2 emissions. This collective effort by the cement industry to mitigate its emissions is highly encouraging and showcases the importance of leadership and collaboration in making the transition to a low carbon economy," said Peter Bakker, President and CEO of the World Business Council for Sustainable Development (WBCSD).

These are good intentions, of course, but just how bad is cement production when compared to other sectors? In 2010, global greenhouse gas emissions contributors were broken down into the following categories:[1]

- Electricity and heat production - 25%;
- Agriculture, forestry and other land use - 24%;
- Industry (including cement production) - 21%;
- Transportation - 14%;
- Other energy - 10%;
- Buildings - 6%.

Animal agriculture, which includes emissions from animal feed production, transportation of feed and livestock and direct emissions from livestock, has been identified as the single biggest source of greenhouse gas emissions in the world, producing 18% of global greenhouse gases, including 32,000Mt of CO_2 emissions.[2] It is also responsible for 65% of anthropogenic NO_x emissions. Due to the growing global population and the increasing quantity of meat consumed by developing countries, emissions from animal agriculture are set to increase by 80% by 2050. Suddenly the cement industry isn't looking quite so bad...

Yet I did not see any mention of greenhouse gas emissions resulting from animal agriculture in reports from the COP 21. As highlighted by the US documentary *'Cowspiracy,'* it's something that individuals and NGOs, including Greenpeace,[2] are reluctant to talk about. It's a topic that seems to have been ignored again by world leaders in December 2015, which is a shame considering the massive difference it could make to climate change and greenhouse gas emissions.

There are many other valid arguments and lots of statistics that show that the world would be a better and healthier place without animal agriculture. For example, the world currently produces enough food to feed a population of 10 billion (the world's population in 2015 was estimated at 7.3 billion). And yet, every day we are bombarded with images of starving children, who we would have no trouble feeding if livestock was not consuming 50% of the world's crops.

In terms of food production resources, annually, each omnivore requires three acres of land, each vegetarian needs 0.5 acres of land and every vegan needs 0.16 acres of land.[2] Animal agriculture consumes 20-33% of global water supplies, occupies 33% of the world's ice-free land and is responsible for 91% of the Amazon rainforest destruction. There's some food for thought. There's also the World Health Organisation's (WHO) October 2015 statement, which outlined the links between eating meat and a wide range of cancers.[3]

Despite all the facts, meat consumption remains the norm and its devastating consequences to the environment and the health of the population in terms of cancers and starvation, are ignored. And the single most commonly-used argument against veganism or even a moderate reduction in meat consumption?

"Bacon, though..."

1. https://www.ipcc.ch/report/ar5/wg3/
2. http://www.cowspiracy.com/facts/
3. http://www.bbc.co.uk/news/health-34615621

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