



Cement and clinker trade and risk of a Chinese slowdown

Global seaborne cement and clinker trading volumes are relatively small compared to global production levels but they are strategically important and have a significant impact on the profitability of the companies involved. Here, Ad Lighthart from Cement Distribution Consultants presents the latest cement and clinker trade patterns, with a focus on Chinese over-capacity and rapidly-developing import markets in Africa and the US.

A cement producer's profitability is determined, to a large extent, by the utilisation factor of its cement plants. This is where seaborne cement trade and distribution plays a major role. The ability to sell cement (or clinker) in long distance markets not only brings the profits that go with the trade itself, but ensures a substantial reduction in production costs per tonne over the full production volume of the plant. Approximately 800-900Mt/yr of clinker and cement benefit from seaborne cement and clinker trade and distribution. Changes in global cement markets and the related changes in trade thus have a major impact on the profitability of cement producers.

In 2015 around 4.1Bnt of cement was produced by the global cement industry.¹ Of this volume, 110Mt of cement and clinker were traded internationally by water. This is just 2.7% of all cement made. As marine transport is the most popular form of transport for cement, this can be used as a proxy for international cement trade. A further 93Mt of cement and clinker was transported by sea domestically in 2015, with 18.7Mt transported domestically on inland waterways, excluding China. This means that a total of 221Mt of cement was transported on water in 2015, around 5.4% of the amount produced.

Right - Table 1: Volumes of clinker, bulk cement and bagged cement (all Mt) transported on water in 2015, split by market and the type of waterway.
* = Excluding China.

	Seaborne trade		Inland Domestic*
	International	Domestic	
Clinker	43.9	9.4	4.7
Bulk Cement	49.1	72.1	10.3
Bagged Cement	17.0	11.5	3.7
Total	110.0	93.0	18.7

Right - Table 2: Volumes of clinker, bulk cement and bagged cement (all Mt) transported on water in 2015, split by type of carrier.
* = Excluding China.

	Bulk Carriers		Self discharging cement carriers	Inland ships and barges*
	International	Domestic		
Clinker	41.2	12.1	0.0	4.7
Bulk Cement	12.7	11.5	97.0	10.3
Bagged Cement	19.6	8.9	0.0	3.7
Total	73.5	32.5	97.0	18.7

A breakdown of clinker, bulk cement and bagged cement transported in 2015 by these different methods is shown in Table 1. The types of vessels carrying each type of product are shown in Table 2.

Global statistics

A total of 49Mt of cement and clinker was traded regionally and 61Mt was traded globally in 2015. 112Mt of cement was distributed by water domestically, excluding China. Figure 1 provides a summary of estimated regional and global cement and clinker exports in 2015.

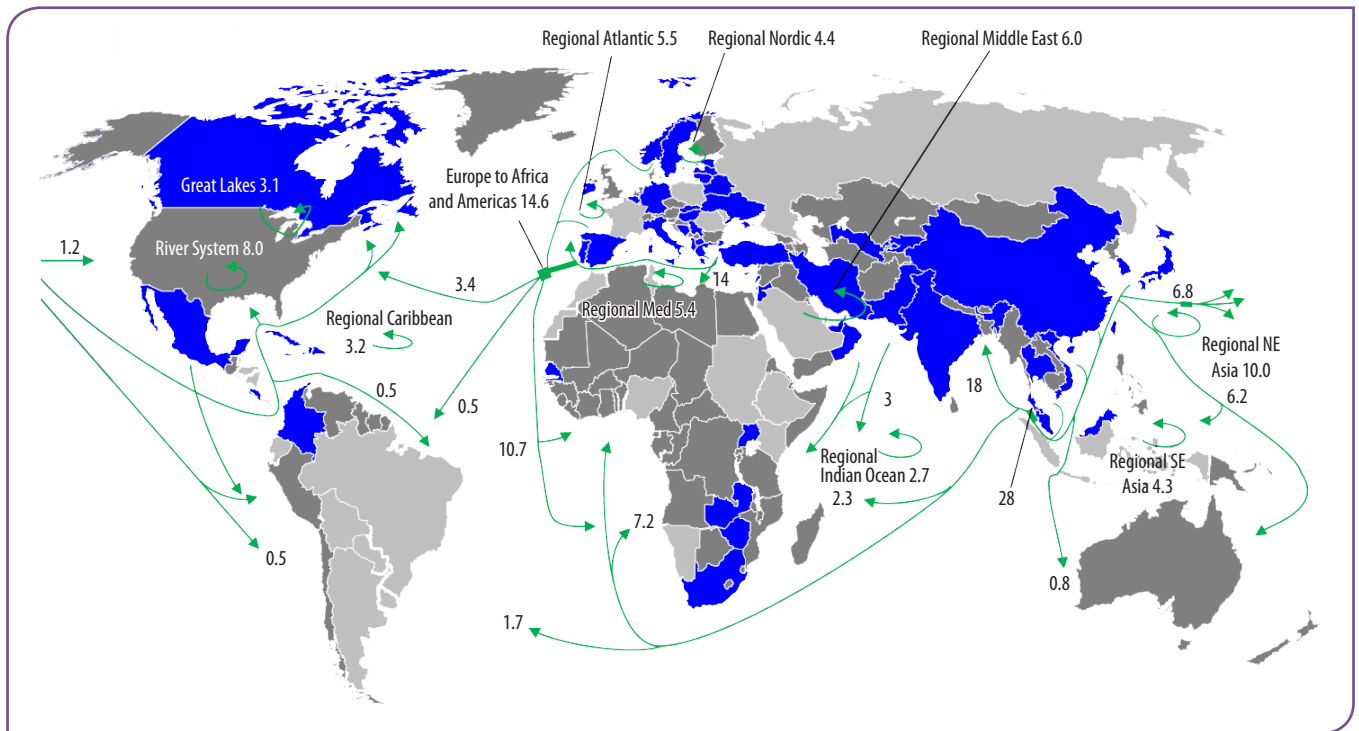
Asia Pacific was the main cement exporting region in 2015, providing 55.1Mt of seaborne exports. This is more than 50% of all seaborne exports. China alone contributed 16.8Mt, around 15.2% of the global total. Vietnam was close behind, exporting 15.7Mt, while South Korea exported 11.1Mt, Japan exported 8.3Mt and Taiwan exported 3.8Mt. Other notable exporters in 2015 included Turkey (14Mt) and the Iberian Peninsula (14.6Mt).

Europe is the second-largest exporting area in the world, with the Mediterranean the key export basis. In 2015 a total of 43.9Mt was exported by sea from European plants, of which 15.3Mt was traded regionally within the continent, 14Mt was exported to North Africa, 10.7Mt to West Africa and 3.9Mt to the Americas.

The largest internal regional markets for cement transport by ship were North East Asia (10Mt), the US Great River System (8Mt), the Middle East (6Mt) and the north east Atlantic (5.5Mt).

Will China flood the world with cheap cement and clinker?

China consumed 140Mt less cement in 2015 than it did in 2014, the first official decrease in 25 years. In the first two months of 2016 sales were down by 9.4%. There is a theoretical risk that China could export hundreds of millions of tonnes of cement.



Above - Figure 1: Estimated global seaborne cement and clinker trade flows in 2015 (Mt).

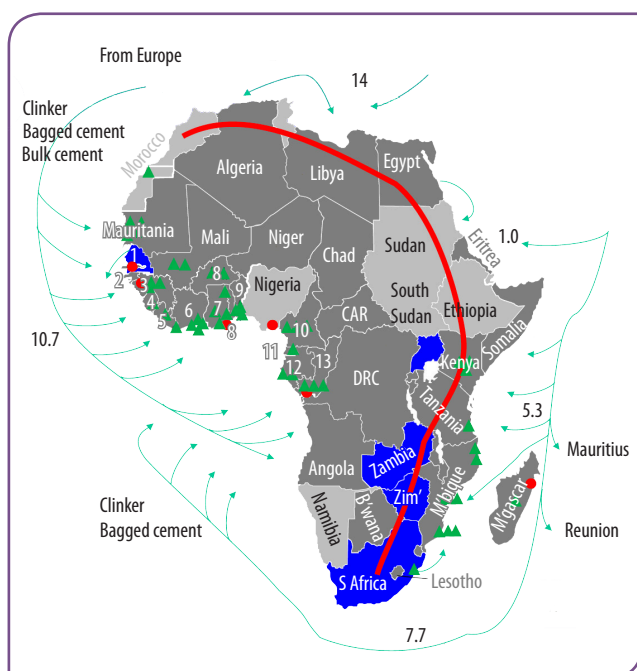
■ Production > Consumption
 ■ Consumption > Production
 ■ Consumption ≈ Production

However, China is in the process of closing old and small capacity, which could represent as much as 20% of all capacity. China also wants to stop production of 32.5 grade cement, which currently represents 70% of all cement produced in the country. Making 42.5 grade the minimum standard would require increased clinker levels per tonne of cement, by around 10-15%, reducing the amount of cement produced accordingly.

On top of these efforts to reduce capacity, China also has almost no cement plants on deep water and has to export via general ports. This makes exports

expensive, despite the fact that free on board export prices have dropped to levels not seen since the Asian crisis of the late 1990s.

The key reason however that China will not be able to export its surplus capacity is that it does not have the international trading network to do so. Bulk cement imports require specialist terminals and clinker imports require grinding plants. The owners of these facilities control cement and clinker trade. Chinese cement companies do not own any of these overseas import facilities. Bagged cement trade is not a realistic alternative, as it is expensive and easily stopped by antidumping regulations.



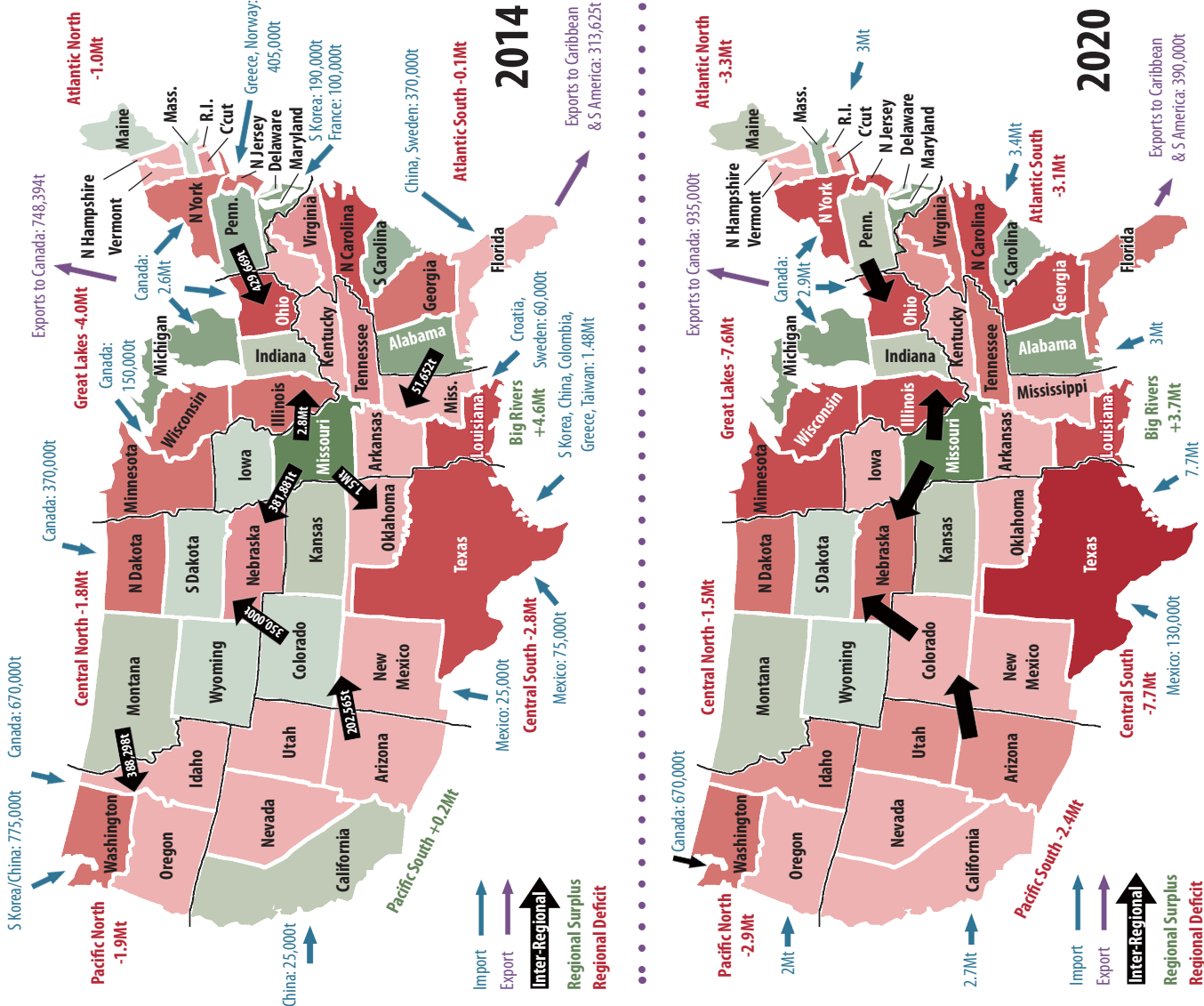
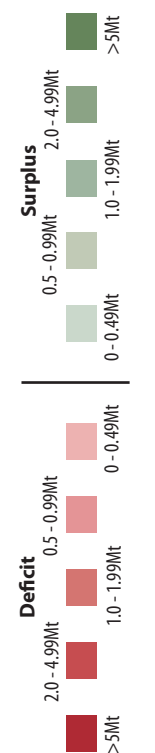


Below - Table 3: Cements surpluses (green) and deficits (red) by US state in 2014 and 2020. All excesses are expected to have grown by 2020, except for four states, which are shown in yellow.

State	2014	2020	Ratio
Missouri	7.5	9.0	1.20
Alabama	3.2	3.8	1.18
Maryland	2.5	2.8	1.15
Michigan	2.1	2.3	1.07
South Carolina	1.7	1.9	1.1
Pennsylvania	1.1	0.8	0.75
California	0.97	-0.58	-0.60
Indiana	0.89	0.76	0.85
Kansas	0.82	0.76	0.93
Montana	0.60	0.68	1.16
Maine	0.42	0.48	1.16
Massachusetts	0.42	0.13	3.16
Wyoming	0.39	0.42	1.06
Colorado	0.32	-0.03	-0.09
Delaware	0.17	0.26	1.45
South Dakota	0.14	0.08	0.57
Iowa	0.06	-0.33	-5.60
Mississippi	-0.01	-0.15	12.0
Oklahoma	-0.03	-0.40	12.9
New Mexico	-0.10	-0.25	2.46
Rhode Island	-0.11	-0.16	1.45
Vermont	-0.12	-0.18	1.45
Arkansas	-0.15	-0.36	2.45
Alaska	-0.17	-0.25	1.45
New Hampshire	-0.19	-0.28	1.45

State	2014	2020	Ratio
Nevada	-0.19	-0.49	2.46
Kentucky	-0.22	-0.49	2.21
Oregon	-0.24	-0.44	1.85
Utah	-0.26	-0.57	2.22
Hawaii	-0.33	-0.48	1.45
Arizona	-0.35	-0.81	2.32
Florida	-0.35	-1.6	4.47
Idaho	-0.46	-0.63	1.45
West Virginia	-0.49	-0.71	1.45
Connecticut	-0.54	-0.78	1.45
Tennessee	-0.58	-1.0	1.74
Nebraska	-0.66	-1.1	1.64
Virginia	-0.75	-1.3	1.70
North Dakota	-1.1	-1.6	1.45
Washington	-1.2	-1.9	1.53
Georgia	-1.3	-2.1	1.60
New Jersey	-1.4	-2.0	1.45
New York	-1.4	-2.3	1.62
Minnesota	-1.5	-2.2	1.45
Illinois	-1.7	-2.7	1.61
Wisconsin	-1.7	-2.5	1.45
Louisiana	-2.1	-3.0	1.45
North Carolina	-2.1	-3.0	1.45
Ohio	-2.7	-3.3	1.23
Texas	-3.8	-7.9	2.05

Right - Figure 3: State-by-state surpluses (green) and deficits (red) in cement production in the United States in 2014 (actual) and 2020 (forecast). Alaska and Hawaii are not shown.



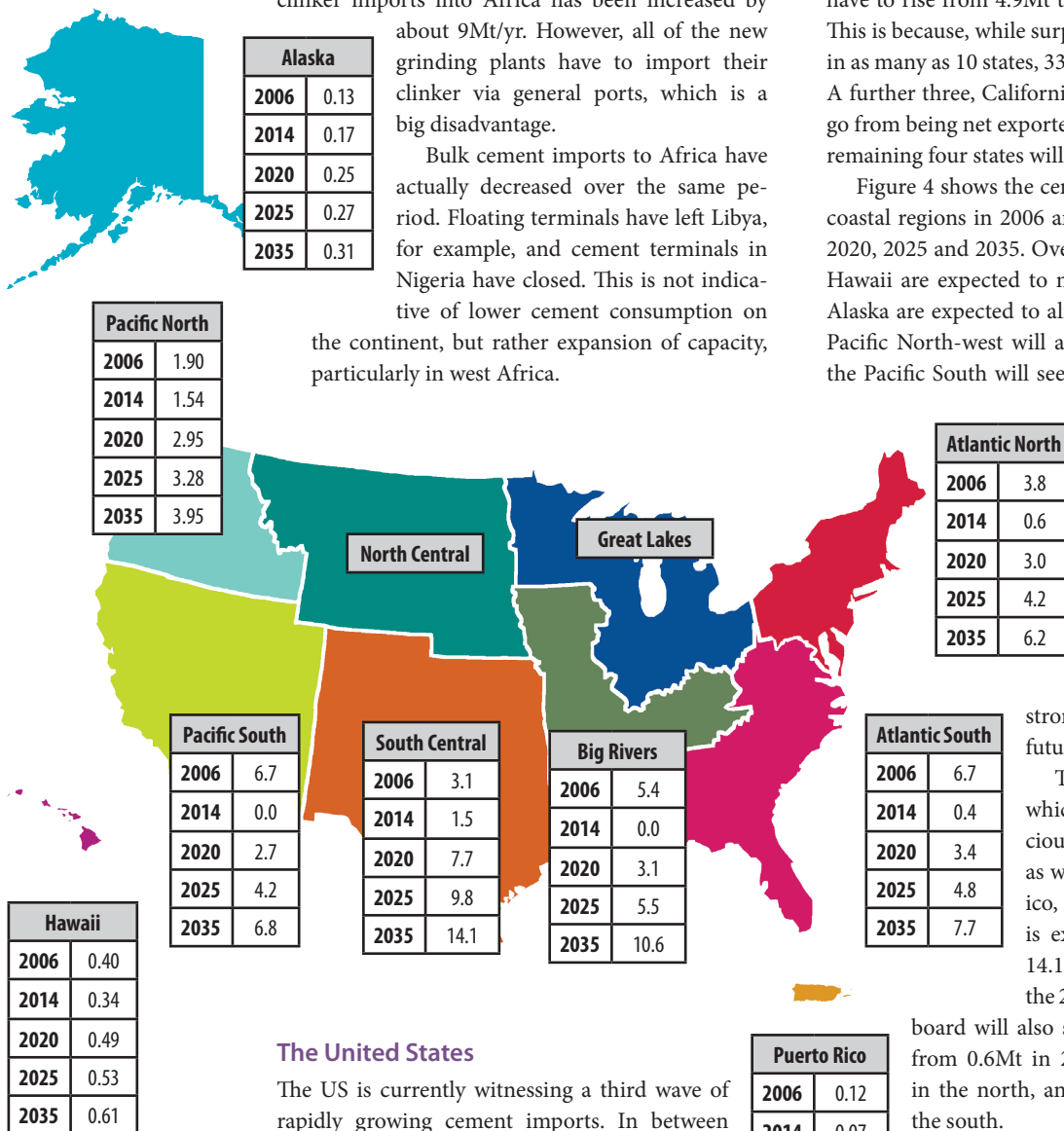


plants are not taken into account, the potential for clinker imports into Africa has been increased by about 9Mt/yr. However, all of the new grinding plants have to import their clinker via general ports, which is a big disadvantage.

Bulk cement imports to Africa have actually decreased over the same period. Floating terminals have left Libya, for example, and cement terminals in Nigeria have closed. This is not indicative of lower cement consumption on the continent, but rather expansion of capacity, particularly in west Africa.

Over the six year period, US cement imports will have to rise from 4.9Mt to 22.4Mt to meet demand. This is because, while surpluses are expected to grow in as many as 10 states, 33 will see their deficits grow. A further three, California, Colorado and Iowa, will go from being net exporters to net importers and the remaining four states will see reduced surpluses.

Figure 4 shows the cement imports into nine US coastal regions in 2006 and 2014, with forecasts for 2020, 2025 and 2035. Over this period, imports into Hawaii are expected to nearly double and those to Alaska are expected to almost triple. Imports to the Pacific North-west will also more than double and the Pacific South will see a massive recovery in demand, based largely on California. The situation is similar in the Big Rivers region, despite this region including Missouri, which will have the largest surplus of cement of any state by 2020. It will presumably continue to be a strong producer further in the future.



Above - Figure 4: Actual and forecast seaborne imports into nine US regions to 2035.

The United States

The US is currently witnessing a third wave of rapidly growing cement imports. In between these waves, there have been two economic downturns (1991-1994 and 2007-2014), during which seaborne imports reduced by 90%. They were 29.2Mt in 2005 but only 2.9Mt in 2009. Around 50% of US terminals have seen more years of crisis than years of profitable imports. Even terminals that are 30 years old have seen up to 10 years with almost zero seaborne imports.

Based on projections from the Portland Cement Association (PCA) it will take until 2025 to reach the level of imports last seen in 2006. As nearly all cement terminals are owned by US-based cement manufacturers there is no risk of uncontrolled imports. However, the places where cement will be imported will change, meaning that new terminals will be needed.

Figure 3 shows how cement production and consumption are expected to change on a state-by-state basis between 2014 and 2020. Those states that are shown in red have deficits in supply, while those in green have more cement than they require.

The Atlantic Seaboard will also see imports grow strongly, from 0.6Mt in 2014 to over 6Mt in 2035 in the north, and from 0.4Mt to 7.7Mt in the south.

Global cement trade - Conclusions

The large surplus export capability in China will almost entirely stay there, unused, and the very large global surplus of cement and clinker on the export market probably will mean that less new production capacity is built in markets where cement is needed. More grinding plants and import will be realised.

There will be continued steady growth in global cement and clinker trade, with Africa and the US as the key growing import markets. Clinker trade will grow especially, with many more coastal grinding plants being built than cement import terminals.

References

1. USGS website, 'Cement 2016,' <http://minerals.usgs.gov/minerals/pubs/commodity/cement/mcs-2016-cemen.pdf>

