Who controls cement trade?

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Global seaborne cement and clinker trade is controlled by the owners of the exporting and distributing cement plants, and (even more so) by the owners of the receiving bulk cement terminals and grinding facilities. Following the recent publication of The ICR Handbook on Global Cement Trade and Distribution, the authors provide key statistics and an insight into ownership and market control with a more detailed focus on the upcoming LafargeHolcim merger.

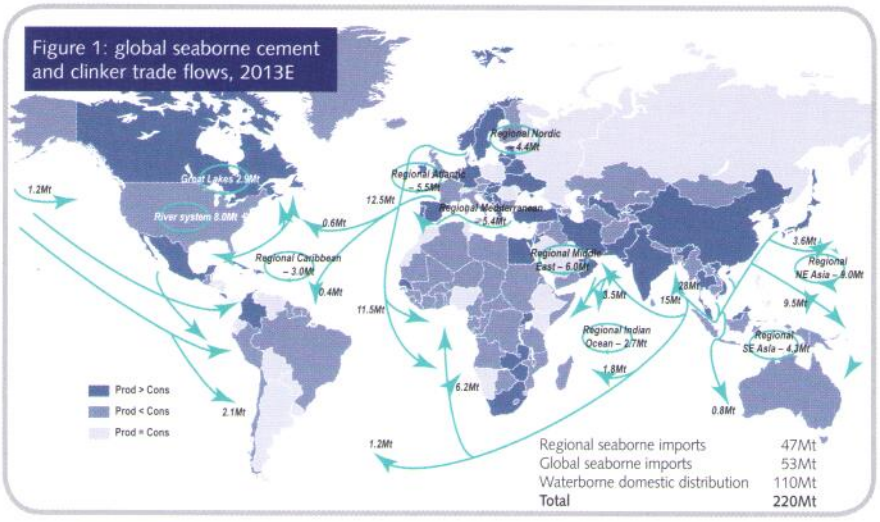
Seaborne trade and distribution is an important part of the cement industry. It is not just the volume and price of the materials moved, but also a strategic tool in running a profitable cement company. The key issue is that cement shortages in one area are levelled out with excess capacity in another. This means that the companies that have this capability can bring the utilisation of their plants to a higher level. The cost savings of this higher plant utilisation are often larger than the margins made on the actual trade and distribution.

However, cement trade and distribution is not a simple open market. A waterside cement plant with ship loading capabilities appears to be in an excellent position to export or distribute its surplus capacity, but without a trading network and firm receiving destinations it cannot ship anything. Seaborne transportation can consist of clinker in bulk, cement in bulk and cement in bags or big bags. Clinker and cement in bulk makes up the vast majority of seaborne trade (83 per cent) and domestic distribution (86 per cent). The owners of the receiving facilities (ie the grinding plants and bulk terminals) control the cement and clinker trade and distribution.

Who are the facility owners?

In respect to global cement plants there are several directories available, such as The Global Cement Report 10th Edition. For coastal plants, grinding facilities and especially bulk terminals no such reference work was previously available. This has now changed. ICR recently published The ICR Handbook on Global Cement Trade and Distribution, authored by Cement Distribution Consultants (CDC). This extensive report covers over 1250 waterside plants, grinding facilities and bulk terminals, shown in more than 90 maps as well as a complete directory of facilities. The maps and tables show global, regional and domestic trade flows and volumes while the report also features sections on ship loading and discharge facilities, trading networks and the economics behind trade and distribution. Based on this handbook, this article gives a global overview of the parties controlling trade and distribution.

Figure 1: global seaborne cement and clinker trade flows, 2013E



Global trade and distribution flows

As can be seen in Figure 1, seaborne global cement and clinker trade in 2013 was around 100Mt, up from 98Mt in 2012. This figure is still substantially below 2007 pre-crisis figures when global seaborne trade was about 130Mt. The lost volume almost entirely consisted of bulk cement (traded to the USA and within Europe). This has been partly compensated for by increased clinker and bagged cement imports in Africa and increased regional trade and domestic distribution in Asia. Seaborne domestic distribution in 2013 was 110Mt, up from 106Mt in 2012, and future forecasts for seaborne trade and distribution are good. The US is expected to raise seaborne imports in 2014 and then will move towards pre-crisis import levels. The trade of cementitious materials (G)GBS and fly ash is also growing rapidly.

Table 1: clinker and cement trade by water, 2013

	Seaborne trade/distribution		*Inland waterways*
	International	*Domestic*	*Domestic*
Clinker (Mt)	38.6	8.6	4.5
Cement bulk (Mt)	43.9	71.3	10.2
Cement bags (Mt)	17.5	11.9	3.5
Total (Mt)	**100.0**	**91.8**	**18.2**

Table 2: clinker and cement trade by vessel type, 2013

Cement/clinker	*Bulk carriers*		*Self-discharging cement carriers*	*Inland ships and barges*
	Large	*Coastal*		
Clinker (Mt)	36.8	10.4	0	4.5
Cement bulk (Mt)	8.1	0.5	96.6	10.2
Cement bags (Mt)	20.1	9.3	0	3.5
Total (Mt)	**65.0**	**30.2**	**96.6**	**18.2**

Table 2 makes a subdivision of the commodities relating to ship size and type used. It shows coastal bulk carriers (≤10,000dwt), large bulk carriers (> 10,000dwt), self-discharging cement carriers and vessels used for domestic distribution on inland waterways.
The fleet of cement carriers is clearly overstretched. Including small coastal vessels between 500 and 2000dwt, their total number is about 325. With an average ship size of 7500dwt and an average annual tonnage transported of close to 300,000t/vessel, round-trip times are about a week. Japan and Indonesia are responsible for the near-full utilisation of the global fleet. As a result, there has been a move of these vessels from the Atlantic and especially the Mediterranean to Asia, which has also meant a switch from international trade to domestic distribution. The lower availability of self-discharging vessels in international trade has resulted in growing shipments in bagged cement and clinker in bulk carriers. Currently there are a number of new-builds and conversions taking place to increase the fleet of cement carriers.

Self-discharging ships are mostly used for domestic distribution and short-distance regional trade. Regional trade often is also part of a distribution network where the cement plant has the same owner as the terminals. This is reflected in the ownership of cement carriers. Approximately, 31 per cent of the global fleet is directly owned by cement producers and 37 per cent by a shipping company related to the cement producer.

A closer look at cement and clinker export plants

When preparing The ICR Handbook on Global Cement Trade and Distribution, CDC located 1269 cement plants, grinding stations and terminals involved in seaborne and inland water trade and distribution. This figure included 217 integrated works. An analysis of these cement facilities shows the methods by which these plants arrange for their ship loading:

- 91 works have their own port or dock (Figure 11).
- Eight units are located away from the port but have a direct conveying belt supplying a loading facility (including storage) in the port.
- 15 facilities rail cement and/or clinker to a loading facility in the port.
- Four plants rail cement to the port and load ships directly from railcars.
- 22 works truck cement to a loading facility in the port.
- 51 plants truck cement or clinker to the port for direct ship loading (Figure 10).
- Nine cement facilities use inland barges to bring cement/clinker to a port for direct transshipment to seagoing ships (as well as using barges for domestic distribution)
- 17 cement plants use barges solely for domestic distribution on the inland waterways.

Of these 217 plants, 134 can load up to handysize and handymax bulkers. A total of 61 can load up to coastal size vessels (≤10.000dwt), five plants load Great Lakes vessels and 17 works load barges for domestic distribution.

It should be noted that this is a snapshot. The number of cement plants, terminals and grinding plants involved in sea and waterborne trade and distribution changes gradually. Some plants have been active in exports and distribution for many decades. Other works only export when they are in a domestic oversupply situation. Technically, loading ships with cement and clinker is not difficult. A cement plant located not too far from a general port can send its bulk trucks with cement to the port and blow the cement directly into the holds of a ship (using a proper dedusting system). However, successful exporting is mostly dependent on a good trading network and customers with a receiving terminal that want to buy cement.

Bulk cement terminals and coastal grinding plants

There are 857 cement terminals receiving their cement by sea or inland water. Of this number, 169 are equipped with a shipunloader and can receive general bulk carriers. These terminals are generally used for international trade. A total of 688 terminals are served by self-discharging ships. Most of the terminals served by self-discharging ships are for domestic distribution or regional trade. Japan has the most dense seaborne distribution network with over 200

Table 3: overview of facilities of the top five multinationals involved in waterborne trade and distribution, 2013

Company	*Cement plants*	*Grinding plants*	*Terminals*	*Total*
Lafarge	23	16	89	128
HeidelbergCement	11	19	88	118
Holcim	20	20	77	117
Cemex	19	3	71	93
Italcementi	10	7	21	38
	83 (38%)	65 (33%)	34 (40%)	494 (39%)

Figure 2: self-discharging cement carrier UBC Cork arriving at floating terminal, Panama

terminals and about 77 self-discharging vessels to supply these. Indonesia has a rapidly-growing series of networks with 36 terminals and 50 cement carriers.

Of the 857 terminals, 140 are suitable to receive handysize or handymax size vessels. Of these 79 have a shipunloader and almost all of them are used for international trade. A total of 61 are served by larger cement carriers and mostly used for distribution and regional trade purposes.

As many as 717 terminals can receive coastal-size vessels, 615 of which are serviced by cement carriers and 102 have a shipunloading system. While the terminals that are served by self-discharging ship are generally part of distribution networks, their counterparts with shipunloaders are almost all used in international trade.

A total of 195 grinding plants receive their clinker (and/or (G)GBFS) by sea or inland waterways. Of these 163 receive their raw materials by vessels in the handysize and handymax bulk carrier range, 19 receive coastal vessels, eight receive Great Lakes vessels and five receive inland barges.

China

Although China is a large exporter of cement and clinker, it is not an influential country in global cement trade as it does not own any overseas cement terminals or coastal grinding plants. It exports because there is a shortage in other markets and its cement is being purchased, but when that ceases to be the case, Chinese exports are expected to drop. Financial analysts fret that an economic downturn in China will flood the world with cheap cement and spoil mature markets. There is no such risk, however. Chinese cement producers simply do not have the required large bulk import terminals in these mature markets.

So who controls seaborne trade and distribution?

As discussed earlier, the owners of the facilities involved in seaborne cement and clinker trade and distribution (and especially the ones that own the receiving grinding plants and bulk cement import terminals) are the ones in control. So who owns these facilities? As can be seen from Table 3, the top five multinationals own about 40 per cent of the facilities involved in seaborne trade and distribution.

Holcim and Lafarge

Given their planned merger, it is of course timely to look at Lafarge and Holcim. Both companies combined have 43 cement plants, 36 grinding plants and 166 terminals involved in seaborne/waterborne trade and distribution. This total of 245 facilities represent 19 per cent of the global total. This is more-or-less in balance with the volumes that are being traded and distributed. Both companies have trade volumes of about 11Mt of seaborne cement and clinker, representing 22 per cent of global trade. Holcim distributes about 9Mt domestically by sea and inland waterways, and Lafarge about 10Mt, making up around 17 per cent of the global total.

It is remarkable that when considering the merger and possible disposals required by antitrust authorities, financial analysts only look at production capacity and completely forget about the trading networks. To bring trading networks into the picture, Figures 12 and 13 show the trading networks of Lafarge and Holcim, respectively.

An important area to start with is the east side of the US and Canada. The combined Lafarge and Holcim networks account for 63 per cent of the seaside facilities on the northeast US and east Canada coastline. These include a number of large import terminals (many idle at present). On the Great Lakes the merged entity would own 55 per cent of waterside facilities (most of US imports from Canada go through the Great Lakes) while 40 per cent of facilities on the inland waterways system would be owned by LafargeHolcim. At this moment almost all these facilities are used for domestic distribution and as such might escape large divestments. However, look at the import capability. Since the 2008 financial crisis, the US has reduced seaborne imports with more than 20Mt, of which 4.5Mt were imported via New Orleans (transshipped from bulk carrier to inland barges and then to the inland waterways, effectively turning barge terminals into import facilities). The general forecast is that within five years the US will be back to pre-crisis import levels. Within 10-15 years overall seaborne imports might be in the 40Mt range. When one adds the potential combined import capability of Lafarge and Holcim to their production capacity, the new company will be quite dominant on the whole North American east side (see The ICR Handbook on Global Cement Trade and Distribution).

Moving to the UK, financial analysts expect that no divestments in cement capacity are required as Holcim has no cement production capacity in the country. However, when the combined production capacity plus import capability is considered, the picture changes significantly. Apart from its cement plants, Lafarge has five terminals in the UK, which can be supplied from the Lafarge Aberthaw plant, but just as easily act as import terminals supplied by Lafarge's

Table 4: cement companies with 20 or more facilities, 2013

	Cement	*Terminals*	*Grinding*	*Total*
Lafarge	23	16	89	128
HeidelbergCement	11	19	88	118
Holcim	20	20	77	117
Cemex	19	71	3	93
Taiheiyo	12	78	2	92
UBE/Mitsubishi	5	58	0	63
Sumitomo/Osaka/ Nippon Steel	4	47	0	51
Italcementi	10	21	7	38
Tokuyama	1	27	1	29
Buzzi Unicem	5	16	2	23
CRH	4	17	2	23
Semen Indonesia	3	19	0	22
Votorantim	4	10	6	20
13 owners controlling	**121 (56%)**	**618 (72%)**	**78 (40%)**	**817(64%)**

Le Havre works in France. Holcim has four import terminals in the UK and is a significant cement supplier there. This means that the merged company has a far larger influence on the UK cement industry than just the Lafarge UK production capacity would suggest

In the Indian Ocean, south of India, the combination would have a near-total monopoly on all the islands. In southeast Asia the merged entity would also have a much stronger presence than reflected by the addition of production facilities only. The combined seaborne trading and distribution capabilities in Malaysia, Indonesia (Sumatra), Vietnam and the Philippines illustrate this.

Like most companies with seaborne trading networks, both Lafarge and Holcim have a far larger import capability than export capability. This has two advantages. The first advantage is that if a country where a company owns both cement production and import facilities has a downturn in cement consumption, it can reduce imports (ie buying less from others) but keep its own cement plants running at a decent utilisation rate. When cement consumption picks up again, it increases the imports (ie buying more from others but making most of the profits in its own market), which means that it not only buys cement but also

Zooming in on global trade & distribution

CDC has built up a database over 15 years for cement plants, grinding units and cement terminals. Currently, over 1250 facilities have been identified as being involved in seaborne or inland water trade and distribution. An excellent basis for a market research tool has been achieved by organising these facilities as pinpoints in Google Earth, sorting them by facility type, country, owner and linking these pinpoints to other source providers.

Figures 3 to 10 give an indication of how this works. First, the Cemex facilities around the Baltic sea are filtered from the database (Figure 3). The blue pinpoints show the plants and ship loading facilities. The yellow pinpoints are receiving terminals in Norway (6), Sweden (3) and Finland (3). Google Earth also allows viewers to zoom in on the facilities, which usually gives quite a good impression of the logistical capabilities. Hyperlinks can be attached for production and logistics information. Cemex uses its Rüdersdorf plant in Germany (Figure 4) to rail cement to either Rostock (Figure 5) or Wismar. In these ports the cement is loaded directly from

Figure 3: Cemex's Nordic network

the railcars into self-discharging ships. The terminals in Norway and Sweden are generally supplied from Germany. Cemex also has a plant in Broceni, Latvia. Cement is railed from here to a terminal in Liepaja (Figure 6). Self-discharging ships are then loaded to supply Finnish terminals. The 12 terminals in the Cemex Nordic network range from the large terminal in Oslo to the small terminal in Surte (Figure 7). Zooming in further on the terminal, we can recognise small cement carriers (Figure 8) conveying cement via an underground pipeline to the storage silo and bulk truck loading station (Figure 9). Combining this information with the actually-traded volumes, the ships that are being used for the trade (using vessel-tracking websites) as well as various country statistics and comparable competitor networks provides a clear network picture.

Figures 4-11: Cemex's key Baltic facilities: Rüdersdorf plant, Rostock loading facility, Liepaja terminal, Surte terminal, Surte self-discharging cement carrier, silos and truck loading at the Surte terminal and Nuh Cimento Hereke shiploading in Nice, France


Figure 4


Figure 5


Figure 6


Figure 7


Figure 8


Figure 9


Figure 10


Figure 11

Table 5: owners with single or multiple facilities, 2013

No facilities	*19*	*16*	*13*	*11*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
No cement plant owners	*1*	*2*	*1*	*2*	*3*	*2*	*3*	*3*	*6*	*5*	*9*	*22*	*141*

Table 6: summary of global cement trade & distribution facility ownership, 2013

No owners	*Facilities*	
	No	*Share (%)*
13	817	64
59	298	22
141	1	11
213	**1256**	

13 facilities – ownership unknown – 1%

influence (second advantage). The cement exporter that supplies the company, out of politeness of course, will not export to the company's competition in other markets.

Returning to the global ownership overview, now consider the companies that have over 20 facilities. Table 4 shows that 13 companies own 64 per cent of the global total. However, there are large differences between these firms.

The top five multinationals have a global presence and are both involved in trade and domestic distribution. Of the other eight companies, UBE/Mitsubishi, Sumito/Osaka/Nippon Steel, Tokuyama and Semen Indonesia have networks that are largely or entirely based on domestic distribution. The remaining four companies have both international trading and domestic distribution networks but are regionally oriented.

In addition, there are the companies with less than 20 facilities. These share 36 per cent of the global total. Here a division can be made between companies that have multiple facilities (ie, a network) and companies that have only one facility. Table 5 shows that there are 59 owners which have multiple facilities, sharing a total of 298 facilities and 141 owners with only one facility.

Conclusion

At first glance, Table 6 indicates that the market looks highly controlled with just 13 companies overseeing 64 per cent of all facilities involved in global trade and distribution. The very dominant position of the combined Lafarge and Holcim networks with close to 20 per cent of all global facilities would also point in that direction.

However, the enormous fragmented bottom segment of 34 per cent of global facilities with 200 companies gives a more or less sufficient counter balance. Especially the 141 owners with only one facility (22 cement plants, 53 terminals, 64 grinding plants) show that independent ready-mix and concrete producers are still able to secure their own cement supply if needed (although this varies by region). Compared to the late 1990s when the top 10 multinationals controlled 80 per cent of global seaborne cement and clinker trade this is remarkable.

For a full and detailed picture of this important segment of the cement industry, the ICR Handbook on Global Cement Trade and Distribution (www.cemnet.com/gctd) is the most comprehensive publication available.

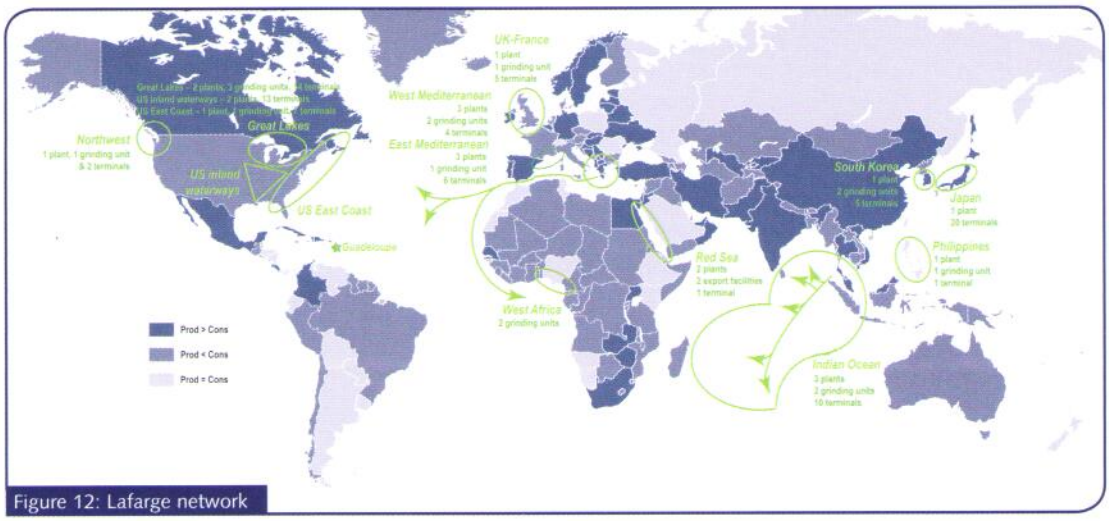


Figure 12: Lafarge network

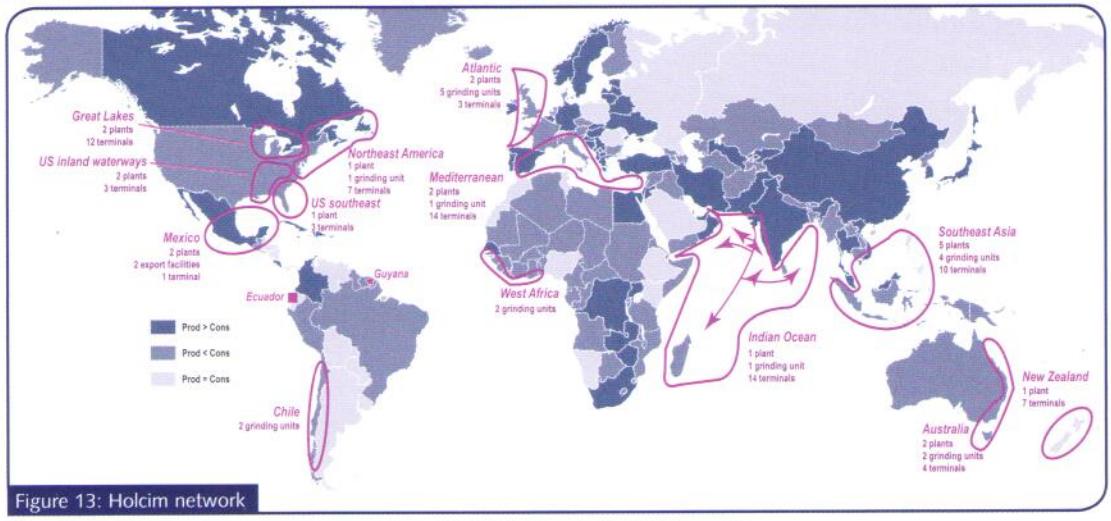


Figure 13: Holcim network