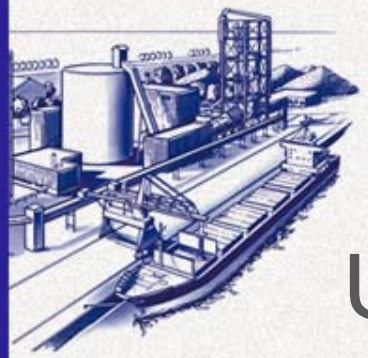
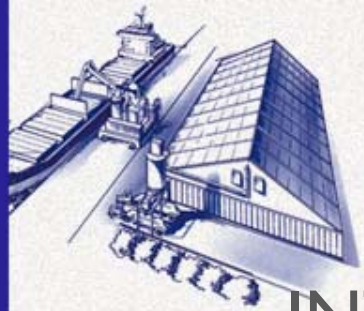




US cement trade, transport and terminals

Ad Ligthart

INTERCEM Americas, Miami 3 November 2015

CEMENT DISTRIBUTION CONSULTANTS

Cement Distribution Consultants an introduction

Market knowledge	Consulting	Project / interim management
• The global cement industry on Google Earth • Large database on waterside cement plants, waterside grinding plants and terminals • Authors of the Handbook on Global Cement Trade and Distribution • 30 Years experience	Logistical, economical and technical services • Feasibility studies of complete logistical chains for trade and distribution • Shipping solutions • Development of new facilities • Terminal and equipment design	Realising and managing projects Examples - Redevelopment of large "brown field" bulk terminal - Temporary cement and fly ash import project for construction of large concrete dam

CEMENT DISTRIBUTION CONSULTANTS

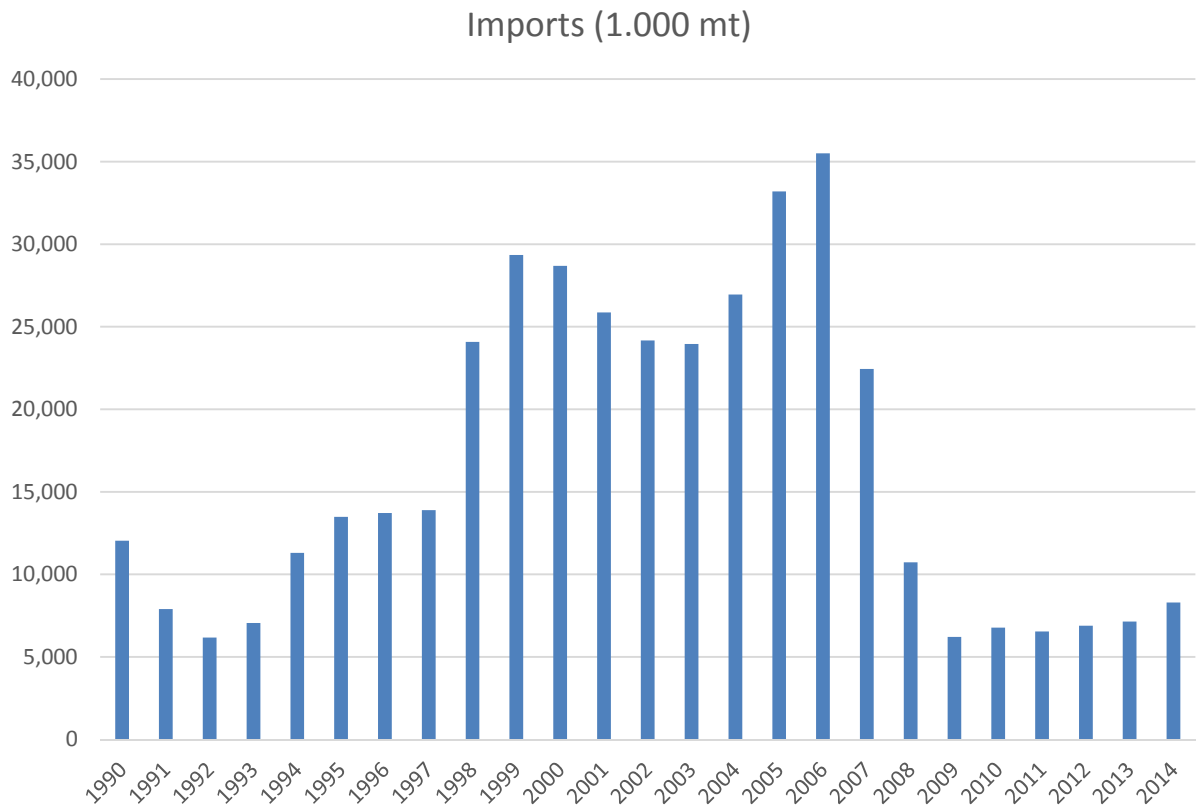
Contents of presentation

- A bit of history on US cement imports
- …and a look into the future
- What happened with US terminals during the crisis…
- …and what is the current situation?
- How suitable are the US terminals after the crisis ?
- Considerations

INTERCEM AMERICAS 1985 2015 30

CEMENT DISTRIBUTION CONSULTANTS

A bit of history of US cement imports



Source: Global Cement Report

CEMENT DISTRIBUTION CONSULTANTS

A bit of history of US cement imports

Before 1975 Relatively small volumes of seaborne imports and coastal distribution using self-discharging cement carriers

1975 First large import terminal for large bulk carriers

1984 – 1990 First "wave" of large terminal construction in US

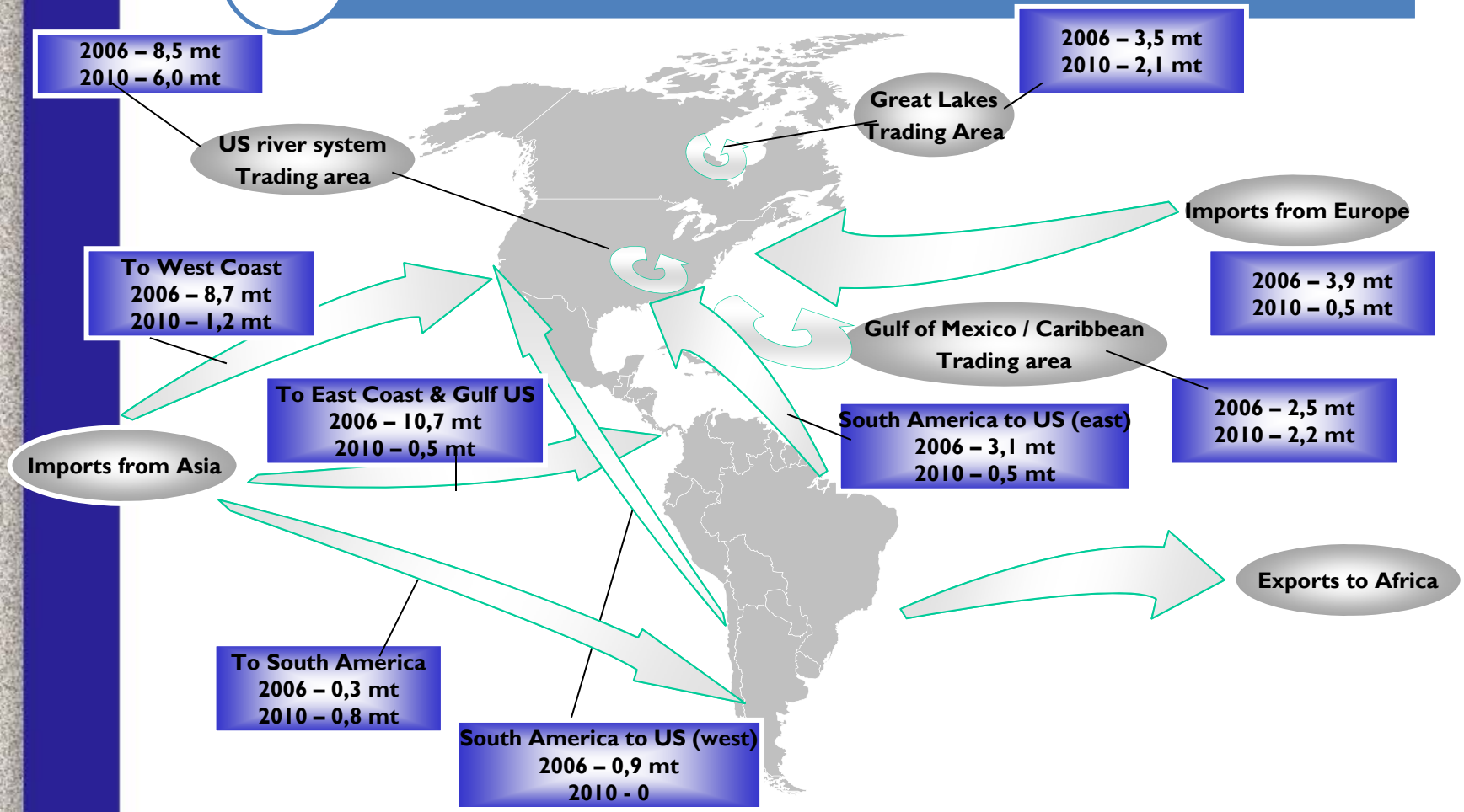
1991 – 1994 Slump in US cement imports (12mt to 5 mt, i.e. almost all seaborne imports stopped)

1995 – 2007 Second "wave" of large terminal construction in US

2007 – 2014 Slump in US cement imports (2006 ⇨ 34 mt, 2010 ⇨ 6,2 mt)
again almost all seaborne imports stopped

CEMENT DISTRIBUTION CONSULTANTS

A bit of history of US cement imports



Waterborne cement and clinker movements in the Americas in 2006 and 2010.
(Total US seaborne imports dropped from 29,2 million tons in 2006 to 2,9 million tons in 2010)

CEMENT DISTRIBUTION CONSULTANTS

A bit of history on US cement imports

	Terminals with ship unloading system	Terminals receiving self discharging vessels
Before 1975	0	12
1975 – 1990	16	10
1991 – 1994 (downturn)	2	0
1995 – 2006	24	6
2007 – 2014 (crisis)	2	0

Notes:

1) For the terminals with a ship unloading system the delivery date of the ship unloader has been used.

2) Of the 26 terminals with ship unloader built as from 1995 there are 22 built since 2000. These have been idle for a longer time than they have been in operation.

Age of US cement terminals

CEMENT DISTRIBUTION CONSULTANTS

A bit of history of US cement imports

50% Of all US large seaborne cement import terminals have been built since 2000 and have seen more years of crisis than years of profitable imports.

Even terminals of 30 years old have seen 10 years of almost zero seaborne imports.

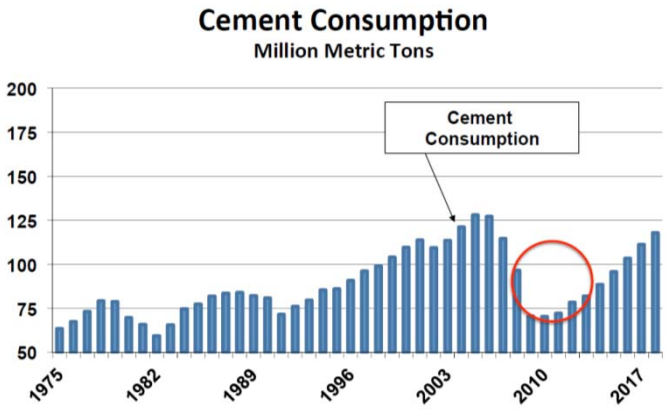
Question: **What is the better terminal?**

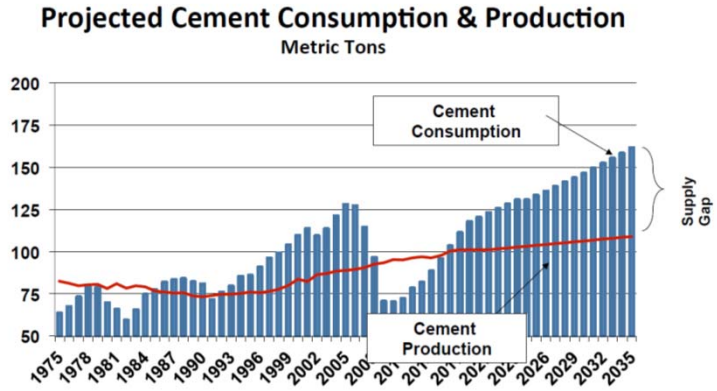
A. A facility totally dedicated to cement (dock, unloader, storage facility) with low operating costs but at a high capital expenditure.

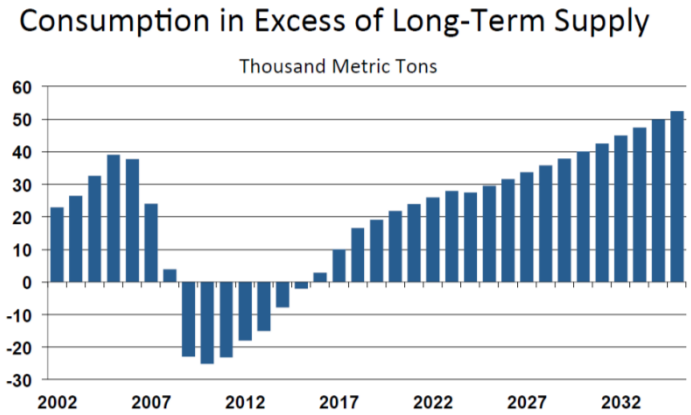
B. A multi product facility of which the cement terminal is only one component and with an "open" dock. The cement terminal is of a type with a medium to low capital cost, accepting somewhat higher operating costs.

CEMENT DISTRIBUTION CONSULTANTS

…and a look into the future







Source: PCA, Ed Sullivan, Intercem London 2015

CEMENT DISTRIBUTION CONSULTANTS

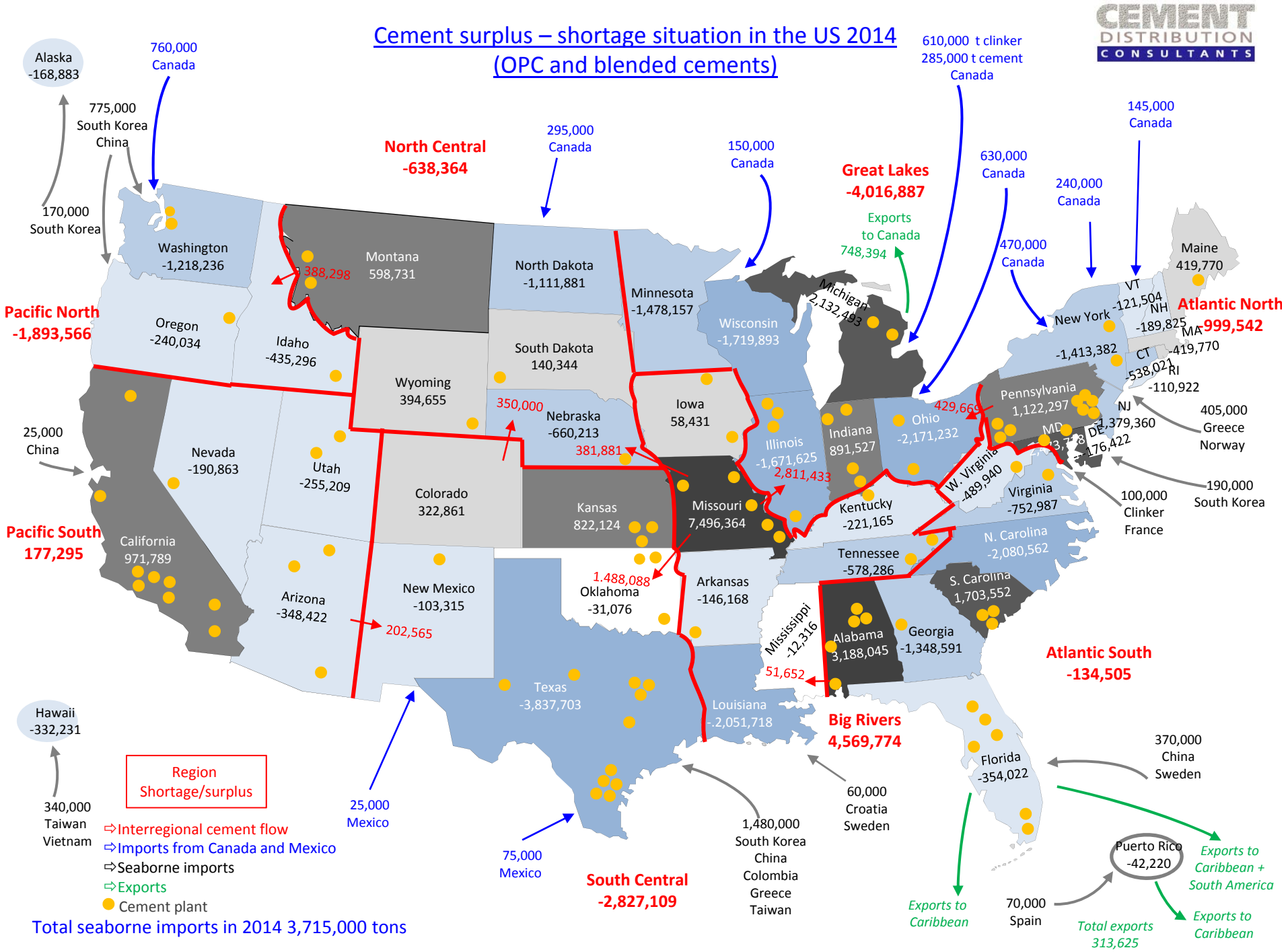
…and a look into the future

Based on the PCA projections for US cement consumption and production it is clear that substantial imports are needed again in the future. But where will these imports be needed?

To answer this questions Cement Distribution Consultants has built a model that calculates the US cement surplus / shortage situation by state.
By grouping the states into 8 regions (largely based on the distribution characteristics of each region) the cement flows between regions become clear. As the basis for the model the detailed USGS information on 2014 consumption, production, imports and exports was used. The 2014 situation is shown in the following map.

CEMENT DISTRIBUTION CONSULTANTS

Cement surplus – shortage situation in the US 2014 (OPC and blended cements)



…and a look into the future

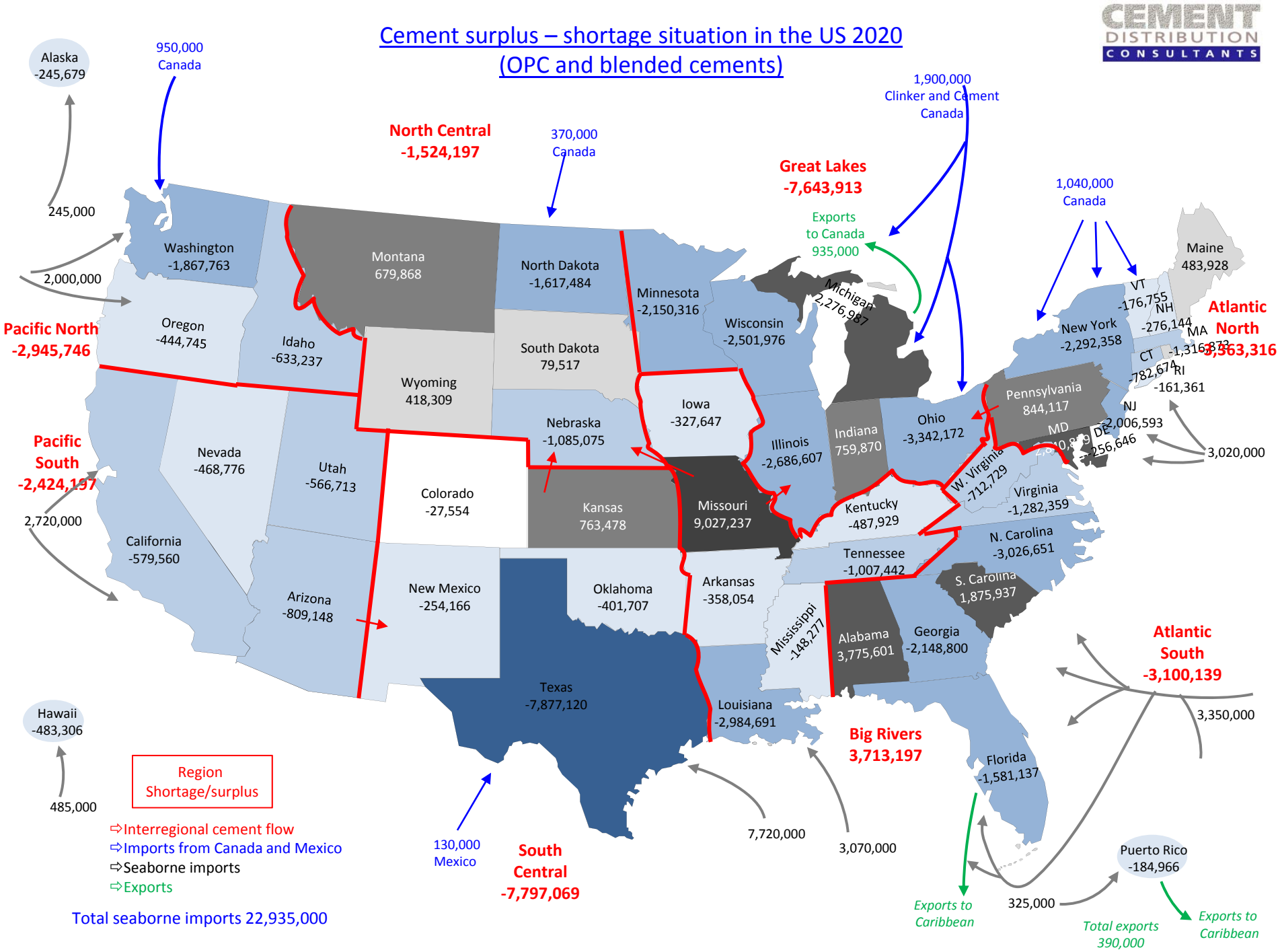
Based on the PCA projections for US cement consumption and production the model has been used to calculate the US situation in 2020-2025-2030-2035. The following assumptions were used.

- The % growth in cement consumption is the same for every state
- The % growth in cement production is the same for every cement plant
- Imports from Canada and Mexico (non seaborne) have a % of growth equal to the growth in US cement production. The same applies to exports from the US to Canada and the Caribbean

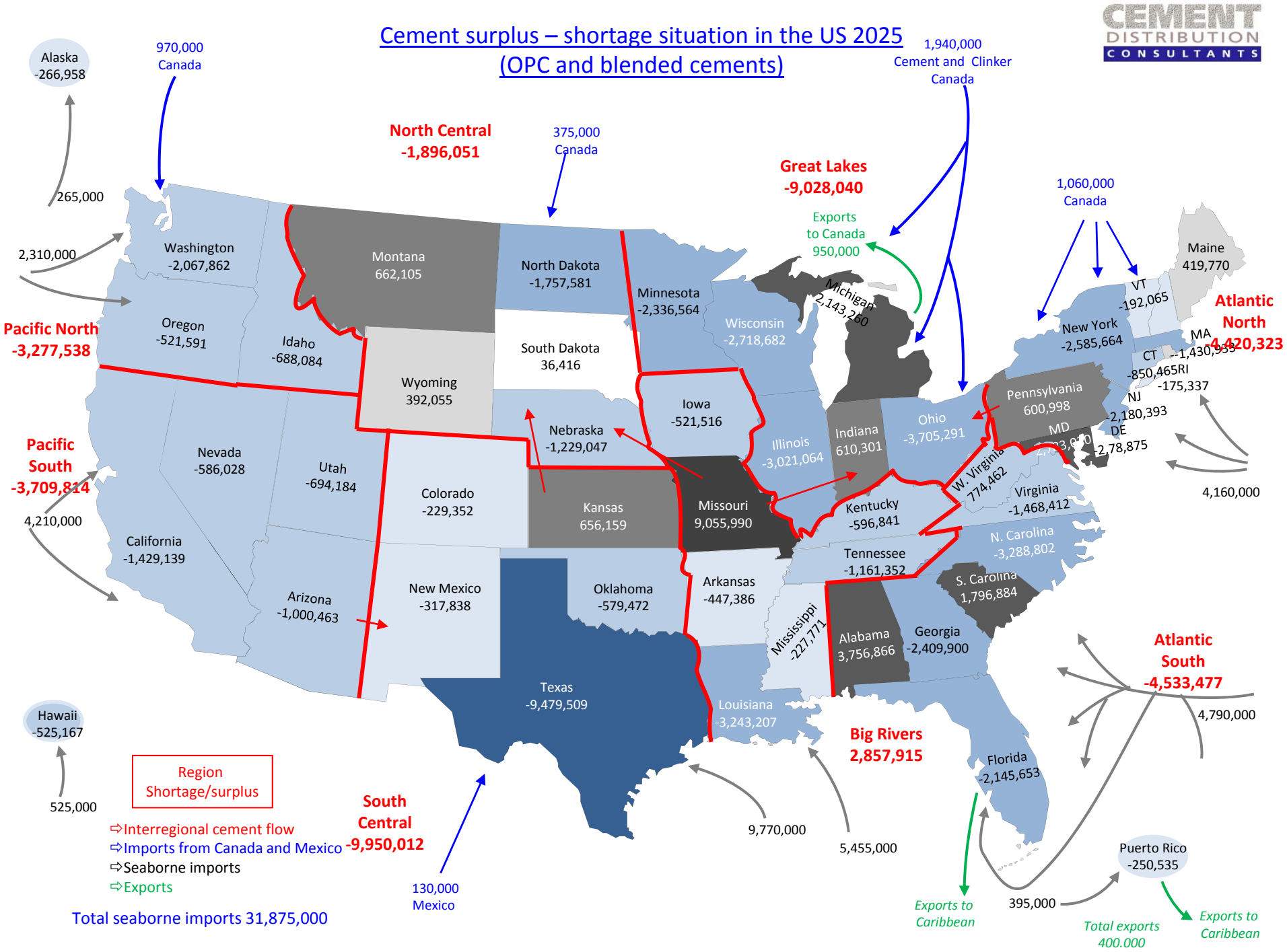
Based on these assumptions the internal cement flows in the US and the seaborne imports into the regions can be calculated and are shown on the following maps.

CEMENT DISTRIBUTION CONSULTANTS

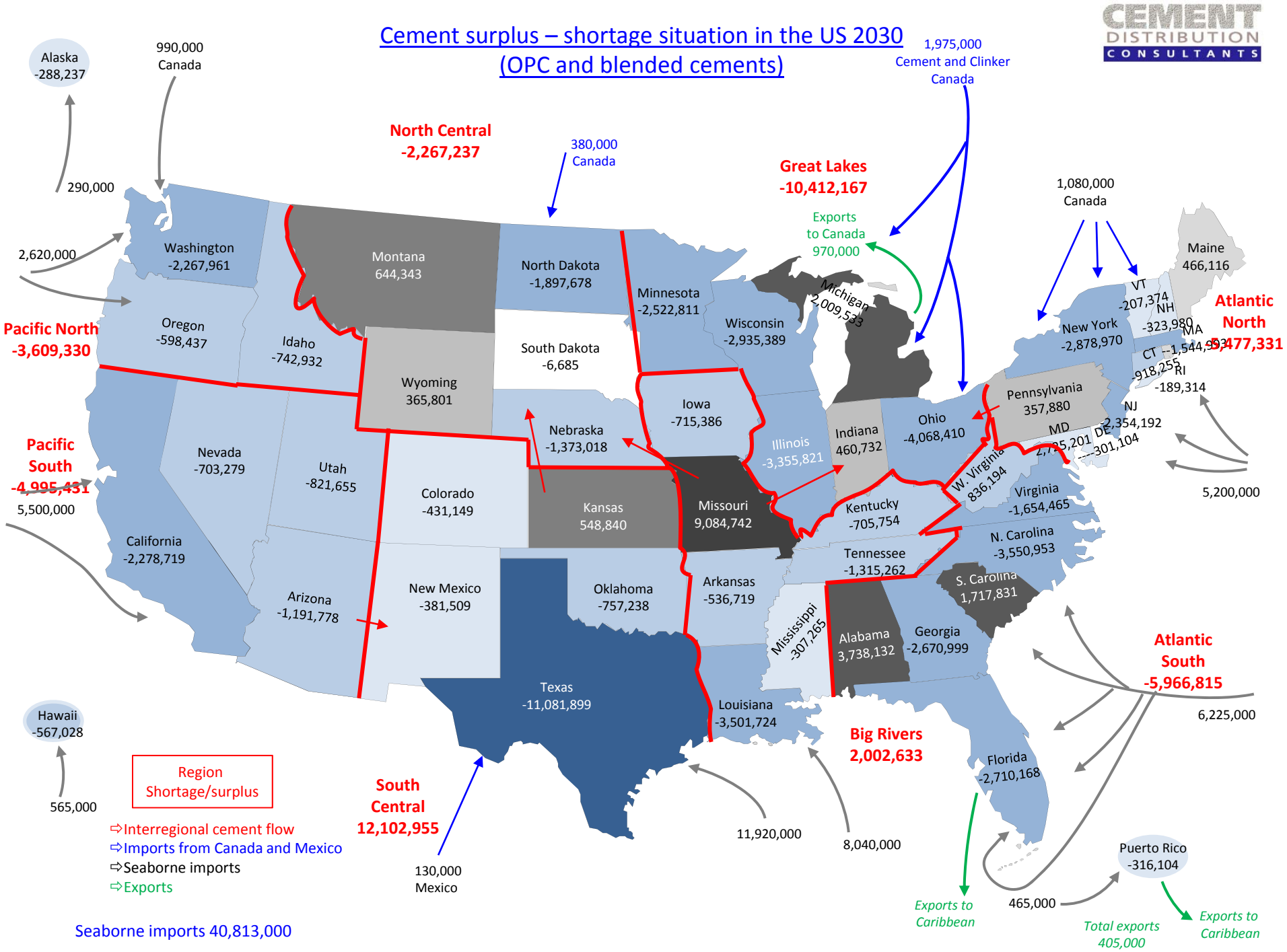
Cement surplus – shortage situation in the US 2020 (OPC and blended cements)



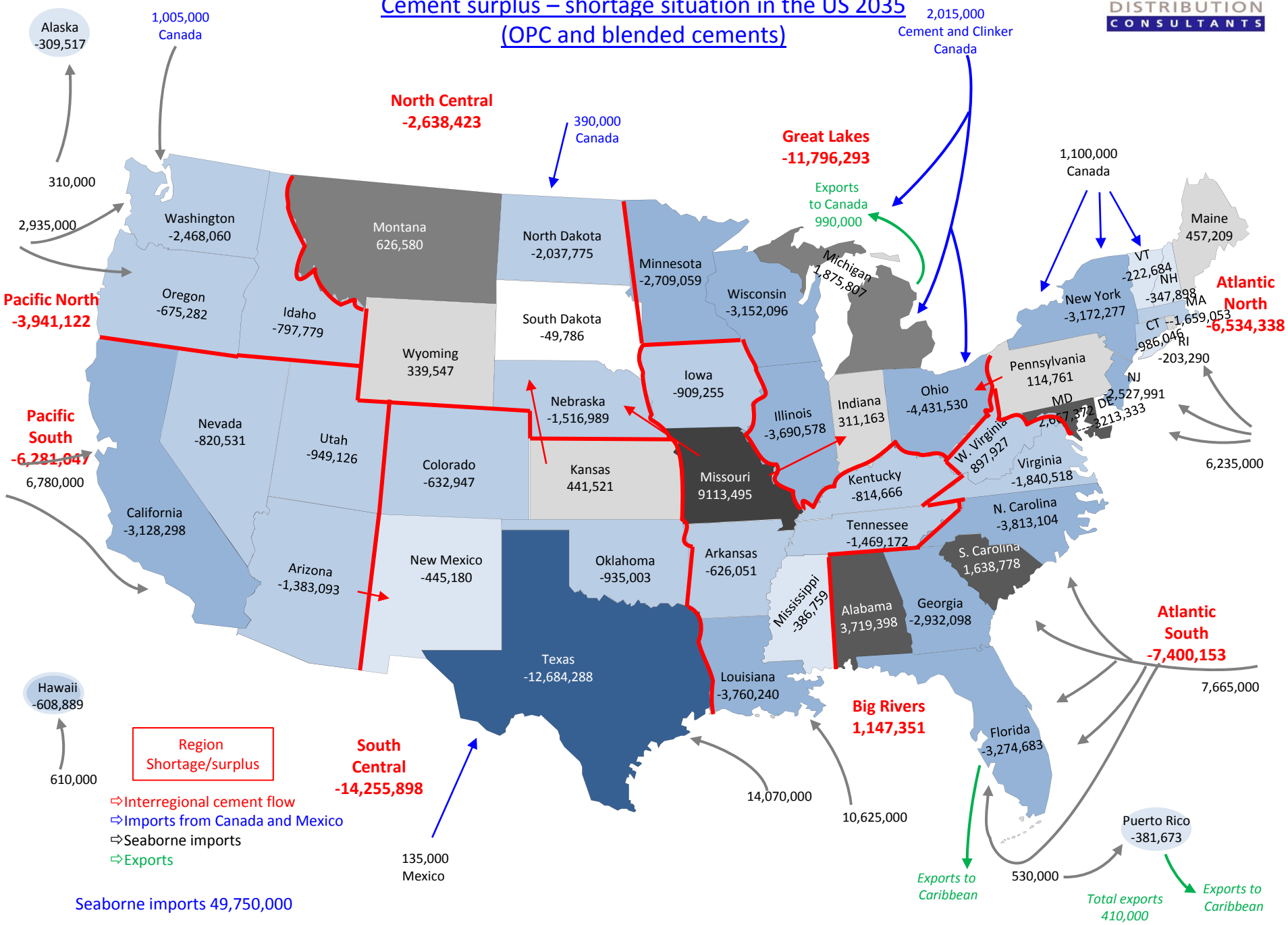
Cement surplus – shortage situation in the US 2025 (OPC and blended cements)



Cement surplus – shortage situation in the US 2030 (OPC and blended cements)

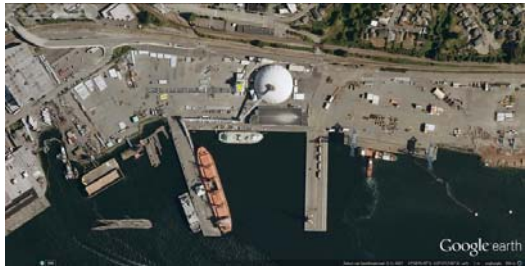


Cement surplus – shortage situation in the US 2035 (OPC and blended cements)



…and a look into the future

- Strong growth of seaborne imports projected in the coming years but…
- It will take till 2025 till seaborne imports have reached the same level as 2006
- When looking regionally, seaborne imports in the Pacific South and Atlantic South will take even longer to reach 2006 levels
- The largest growth areas are the Pacific North and Atlantic North but especially the South Central region (Texas!)

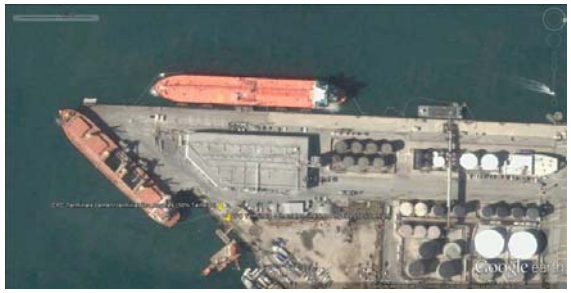


CEMENT DISTRIBUTION CONSULTANTS

What happened to Us import terminals during the crisis

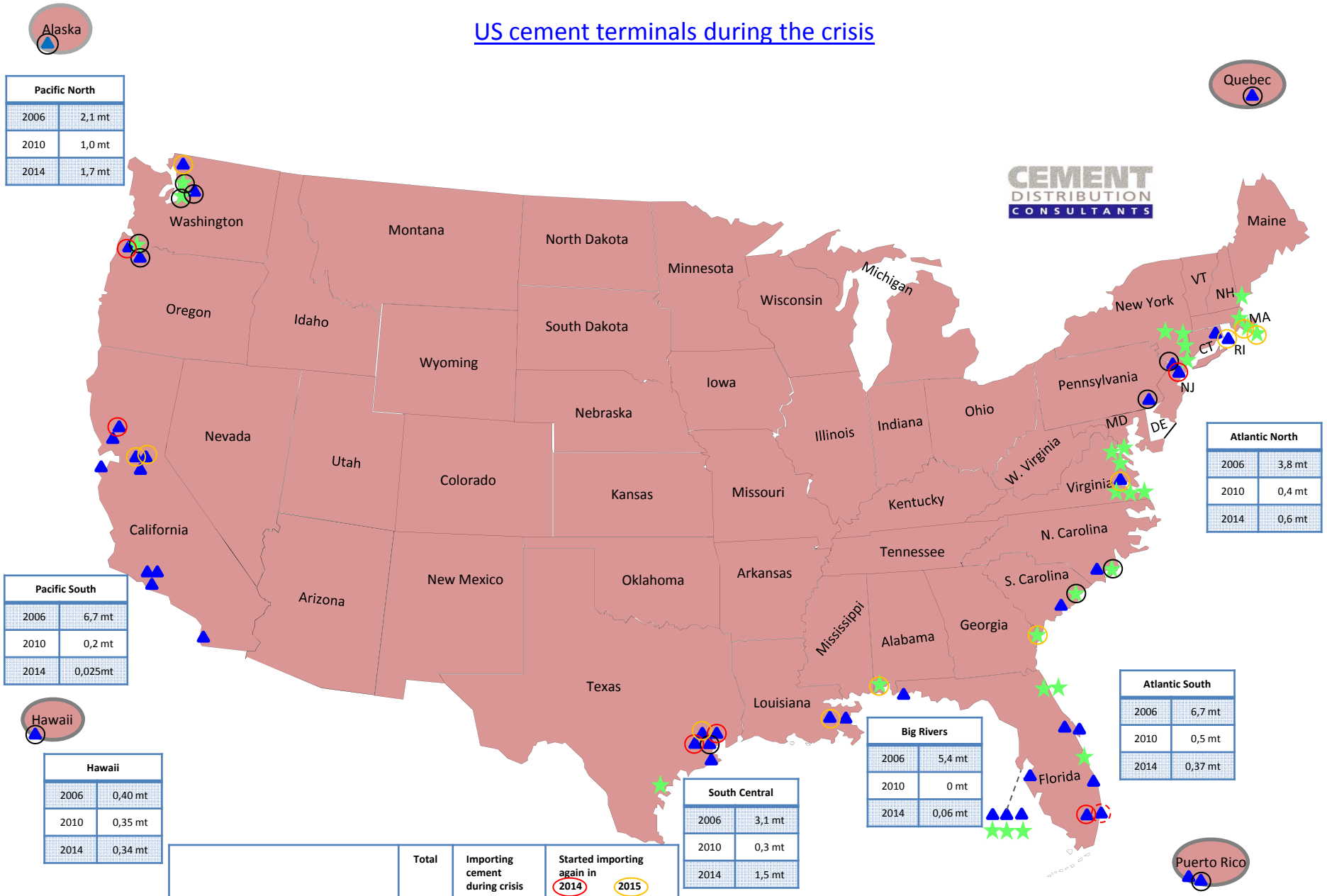
Are the US terminals that can receive seaborne cement imports still able to meet the growing imports?

The following slides provide some essential information.



CEMENT DISTRIBUTION CONSULTANTS

US cement terminals during the crisis



Pacific North	
2006	2,1 mt
2010	1,0 mt
2014	1,7 mt

Atlantic North	
2006	3,8 mt
2010	0,4 mt
2014	0,6 mt

Pacific South	
2006	6,7 mt
2010	0,2 mt
2014	0,025mt

Hawaii	
2006	0,40 mt
2010	0,35 mt
2014	0,34 mt

South Central	
2006	3,1 mt
2010	0,3 mt
2014	1,5 mt

Big Rivers	
2006	5,4 mt
2010	0 mt
2014	0,06 mt

Atlantic South	
2006	6,7 mt
2010	0,5 mt
2014	0,37 mt

	Total	Importing cement during crisis	Started importing again in 2014	2015
Terminals with ship unloading system	44	8	7	6
Terminals receiving self-discharging vessels	28	5	0	3
Total	72	13	7	9

All other terminals have been involved in domestic distribution or have been mothballed

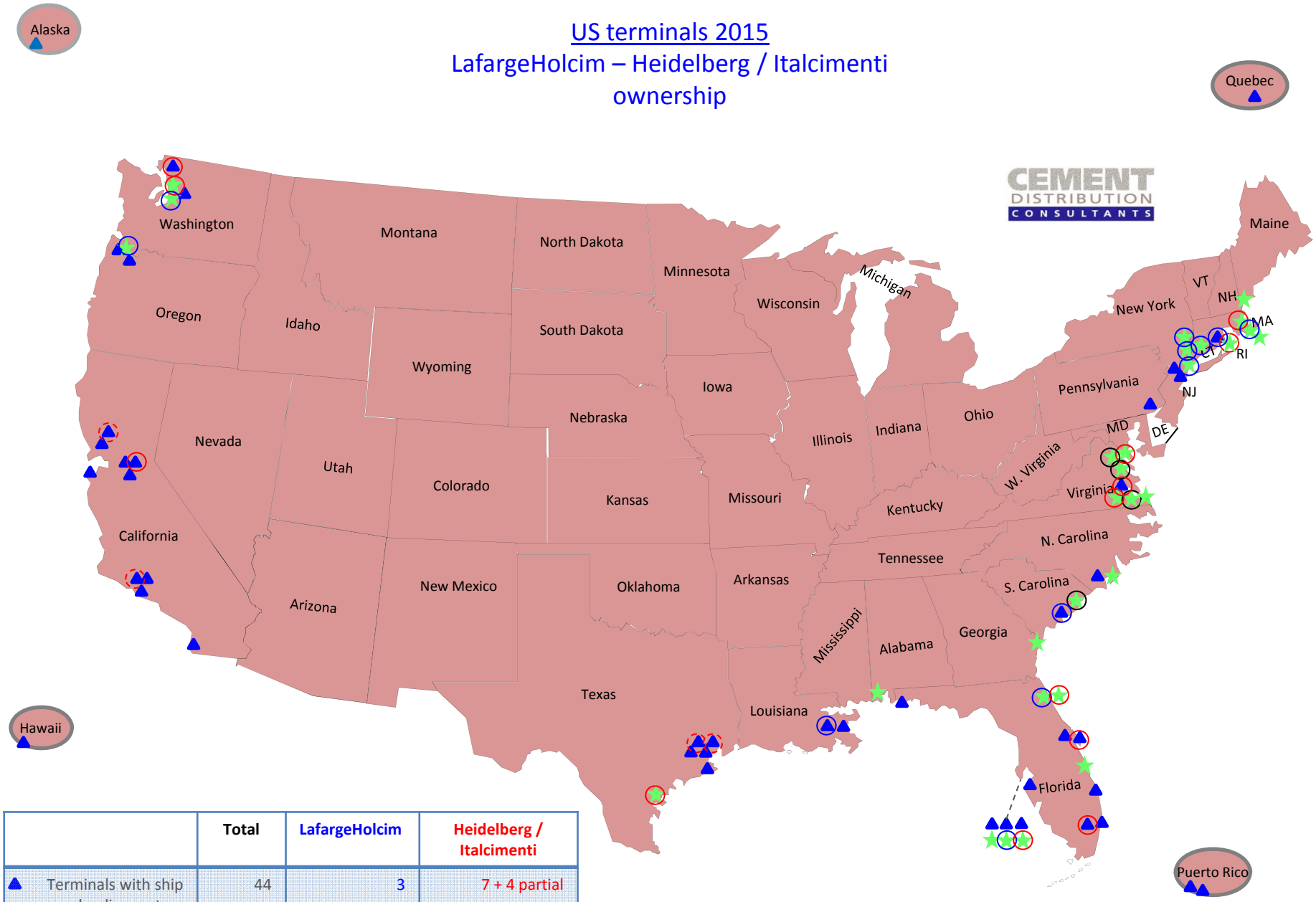
…and what is the current situation?

	Terminals with ship unloading system	Terminals receiving self discharging vessels	Total
US cement producer (multinational)	34	27	61
US cement producer (domestic owners)	5	1	5
“Independent” (not related to cement producers in the US)	6	0	6

Ownership situation of US terminals

CEMENT DISTRIBUTION CONSULTANTS

US terminals 2015
LafargeHolcim – Heidelberg / Italcimenti ownership



	Total	LafargeHolcim	Heidelberg / Italcimenti
▲ Terminals with ship unloading system	44	3	7 + 4 partial
★ Terminals without ship unloading system	28	13	7
Total	72	16	14 + 4 partial

…and what is the current situation?

- Given the ownership situation of US cement import terminals it is impossible to flood the US with cheap Chinese cement. Cement imports are controlled by the cement manufacturers in the US.

- When Chinese exporters want to influence their exports to the US they have to build a market (i.e. relations with US ready-mix and concrete products groups).
  They also need to realise their own import facilities. This takes years.

- Long-term availability of high volumes of low priced cement for export, in combination with low shipping costs might mean that cement producers in the US might cancel or delay scheduled plant improvements and expansions and import more cement instead.

Notes for financial analysts!

CEMENT DISTRIBUTION CONSULTANTS

The impact of Supramax vessels

The typical seaborne cement import terminals in the US were built for Handymax vessels (approx. 40.000 metric tons cargo size) and have a storage capacity of about 60.000 metric tons

Shipping has changed

New Supramax vessels are more cost effective than Handymax vessels and have a cargo size of approx. 50.000 tons.

There are very few cement terminals in North America that can handle Supramaxes.

Supramax 50.000 – 66.000 Dwt

Handymax 40.000 – 50.000 Dwt

Handysize 10.000 – 40.000 Dwt

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The impact of Supramax vessels

Handymax		New "Eco" Supramax	
Length	183 m	Length	190 m
Width	30 m	Width	32,30 m
Depth	16 m	Depth	18,00 m
Draft	11,60 m	Draft	12,95 m
Deadweight	40,000	Deadweight	58,000
Fuel Consumption	22 tons @ 12,5 km	Fuel Consumption	17,5 tons @ 12,5 km

CEMENT DISTRIBUTION CONSULTANTS

How suitable are US terminals still after the crisis?

	Terminals with ship unloading system	Terminals without ship unloading system
< 45.000 mtons	7	24
45.000 – 70.000 mtons	30	4
≥ 70.000 mtons	7	0

Storage capacity of US cement terminals

CEMENT DISTRIBUTION CONSULTANTS

How suitable are the US terminals after the crisis?

Volume wise

- It will take 10 years before seaborne imports reach the level of 2006
- But…..there is a shift in where the imports are going to.

Shipping wise

- Short distance supply from South America has dried up
- Move from Handymax to Supramax vessels on long distance voyages!!

Owner-ship wise

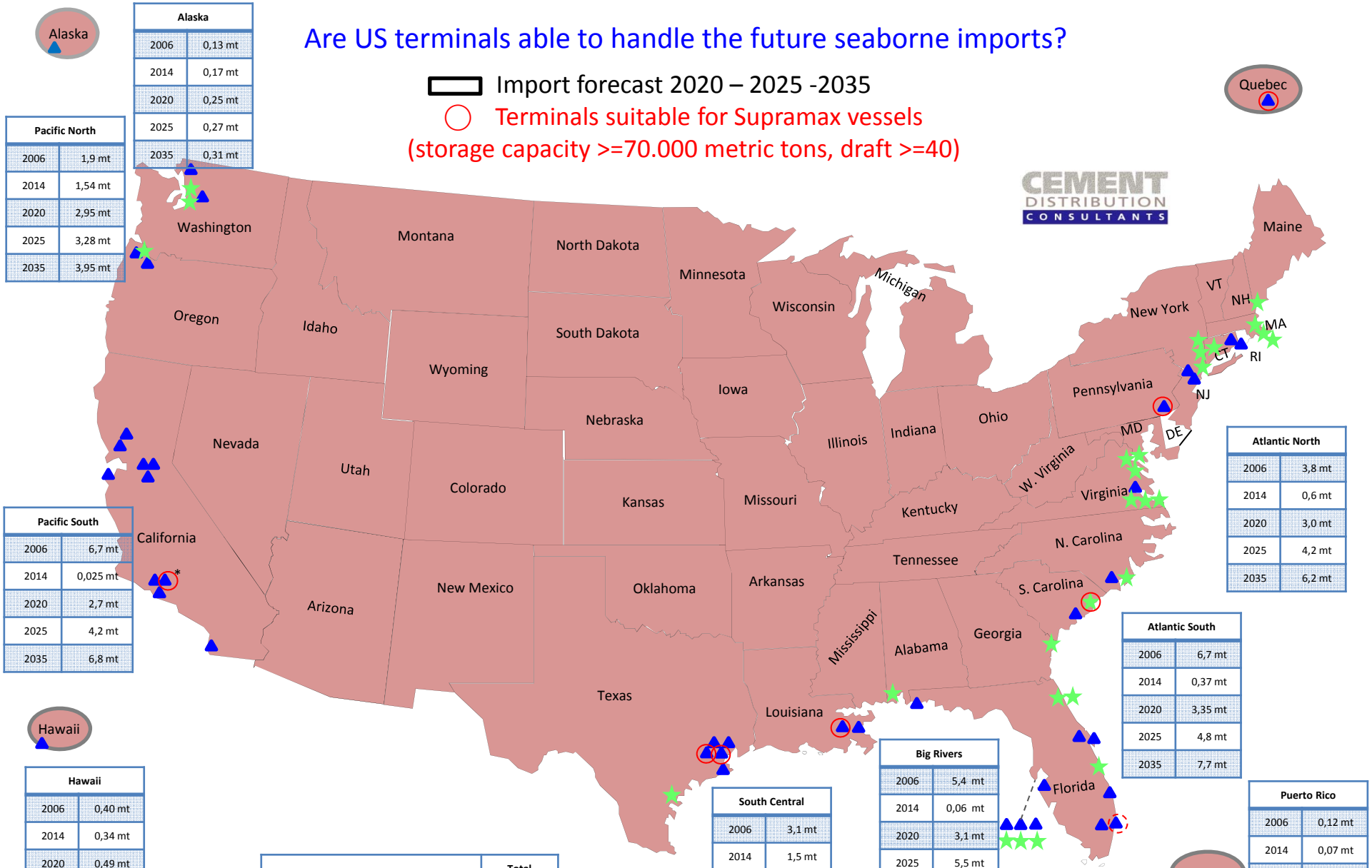
- Is terminal ownership in US still not in line with market shares of cement producers?
- What about independent ready mix?

CEMENT DISTRIBUTION CONSULTANTS

Are US terminals able to handle the future seaborne imports?

Import forecast 2020 – 2025 -2035

Terminals suitable for Supramax vessels
(storage capacity >=70.000 metric tons, draft >=40)



Alaska	
2006	0,13 mt
2014	0,17 mt
2020	0,25 mt
2025	0,27 mt
2035	0,31 mt

Pacific North	
2006	1,9 mt
2014	1,54 mt
2020	2,95 mt
2025	3,28 mt
2035	3,95 mt

Pacific South	
2006	6,7 mt
2014	0,025 mt
2020	2,7 mt
2025	4,2 mt
2035	6,8 mt

Hawaii	
2006	0,40 mt
2014	0,34 mt
2020	0,49 mt
2025	0,53 mt
2035	0,61 mt

	Total
Terminals with ship unloading system	43
Terminals without ship unloading system	29
Total	72

South Central	
2006	3,1 mt
2014	1,5 mt
2020	7,7 mt
2025	9,8 mt
2035	14,1 mt

Big Rivers	
2006	5,4 mt
2014	0,06 mt
2020	3,1 mt
2025	5,5 mt
2035	10,6 mt

Atlantic North	
2006	3,8 mt
2014	0,6 mt
2020	3,0 mt
2025	4,2 mt
2035	6,2 mt

Atlantic South	
2006	6,7 mt
2014	0,37 mt
2020	3,35 mt
2025	4,8 mt
2035	7,7 mt

Puerto Rico	
2006	0,12 mt
2014	0,07 mt
2020	0,32 mt
2025	0,4 mt
2035	0,53 mt

Considerations

As it will take 10 years for seaborne imports to reach 2006 levels it would seam that the current existing terminals can handle the growing import volumes but…….

1) The direction of the import flows is changing compared to 2006. This would mean that in the Pacific North and Atlantic North terminal expansions and/or new terminals might be needed in a few years. Texas certainly will need new terminals.

2) The changes in ownership of cement producers in the US and Canada in the past eight years mean that the market shares of many companies are not in line anymore with their import capabilities. This means that several cement producers, to keep their market share, will need to expand their import capability. this will mean new terminals.

CEMENT DISTRIBUTION CONSULTANTS

Considerations

3) It is quite likely that independent ready-mix groups will look into the possibility of importing their own cement. This also will mean new terminals.

4) In 2006 the US imported over 3 million tons from Venezuela and Colombia mostly by self-discharging cement carriers to small terminals in the Gulf of Mexico and Atlantic South regions. This supply has almost entirely gone. This means that the small terminals that are only capable to receive cement from self-discharging ships have a supply problem and might have to be enlarged and fitted with ship unloaders to receive cement in bulk carriers from long distance suppliers.

CEMENT DISTRIBUTION CONSULTANTS

Considerations

5) The use of Supramax bulk carriers is more economical than Handymax vessels. Very few US cement terminals are able to receive such vessels. It makes a lot of economical sense to expand existing terminals (more storage, added ship unloading capacity, dredging). This is already happening.

6) In global cement and clinker trade the trend in the past years has been towards clinker. This because the costs to handle, store and transport clinker are significantly lower than cement. It is also easier for clinker to be transported in Supramax carriers as general bulk ports can be used instead of specialised cement facilities. It is quite possible that the trend towards clinker would also be suitable for the US. This would require grinding plants.

CEMENT DISTRIBUTION CONSULTANTS

Considerations

7) The use of Supramax vessels is easy to realize for Mississippi transhipments. In 2006 about 5 million tons was imported via the Mississippi. Transhipment from ship to barges is possible both for cement and clinker.

8) The recent crisis has been a reminder how cyclical cement imports can be. When new cement terminals are build this should be kept in mind. Terminal design should take this better into account. There should be a focus on flexibility of use of dock, terminal area and storage facilities and R.O.I periods for dedicated cement storage and equipment should be shorter.

9) Other issues that influence terminal design will be the imports of cementitious materials, multiple cement types and / or multiple cement sources that all will have to be kept separated. This will mean an increase in storage capacity and a large flexibility of storage facilities.

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THANK YOU

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