

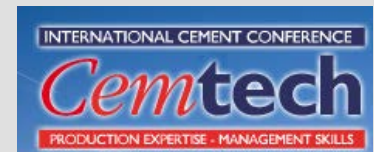
# Global seaborne cement and clinker trade

Ad Ligthart

Cement Distribution Consultants



30-09-2013



# Contents of presentation

- **Introduction**
  - To Cement Distribution Consultants
  - The issue with global cement trade statistics
  - What is cement?
  - Methodology to determine trade statistics
  - The economics behind cement and clinker exports
  - A few general remarks
- **Regional overview with information on seaborne trade and domestic distribution, shipping methods and facilities**
  - Europe
  - Africa and Middle East
  - North America
  - South America (incl. Caribbean)
  - North East Asia
  - South East Asia
  - South Asia / Indian Ocean
  - Australia / New Zealand
- **Global summary**

# Cement Distribution Consultants

## an introduction

Market knowledge	Consulting	Project / interim management
<ul style="list-style-type: none"><li>• The global cement industry on Google Earth</li><li>• Large database on waterside cement plants, waterside grinding plants and terminals</li><li>• 30 Years experience</li></ul>	<p>Logistical, economical and technical services</p> <ul style="list-style-type: none"><li>• Feasibility studies of complete logistical chains for trade and distribution</li><li>• Shipping solutions</li><li>• Development of new facilities</li><li>• Terminal and equipment design</li></ul>	<p>Realising and managing projects</p> <p>Examples</p> <ul style="list-style-type: none"><li>- Redevelopment of large “brown field” bulk terminal</li><li>- Temporary cement and fly ash import project for construction of large concrete dam</li></ul>

# The issue with official cement and clinker trading figures

When adding up the global cement and clinker export and import figures as provided by all national cement associations exports are 20% larger than imports. What is happening here?

A lot of clinker and cement imports are not reported!!

There is often no separation between clinker and cement exports and for cement no separation in bulk, big bags or paper bags.

National cement associations often do not report imports by independents.

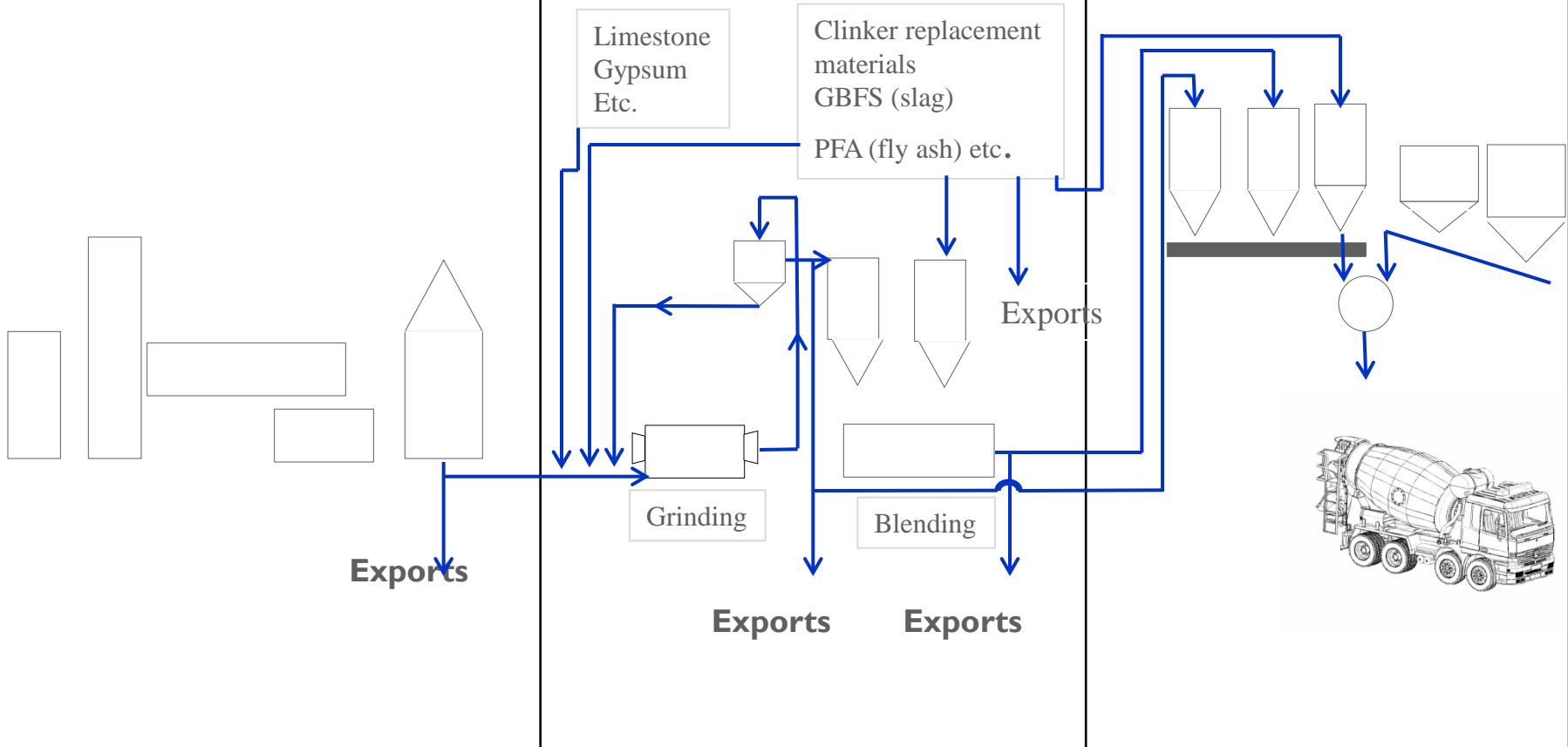
Clinker replacement materials (PFA, GBFS, etc.) are not covered in statistics.

# What is cement?

## Clinker production

## Binder production

## Concrete production



# Cement Distribution Consultants

## Methodology of determining seaborne import and export figures

- Production and export figures are more reliable than consumption and (clearly) import figures.
- Work from countries with highly reliable figures first and after that start putting together the rest of the puzzle.
- Build up a clear picture of clinker production and cement production of each country and determine the clinker factor in cement and with that export capabilities / import requirements.
- Bulk cement and clinker require dedicated facilities for seaborne exports and imports. When you know the facilities and their ownerships you can establish the trading networks and cement and clinker flows.

So who owns.....

- The cement plants that export by sea?
- The grinding facilities receiving clinker by sea?
- The cement terminals along coasts and rivers?
- How are trading networks build up? How do they enhance the land locked plants behind them?
- How do seaborne trade and seaborne domestic distribution interact?

To answer these questions  
Cement Distribution Consultants has put the  
global cement industry on Google Earth

# Cement Distribution Consultants

## The cement industry on Google Earth



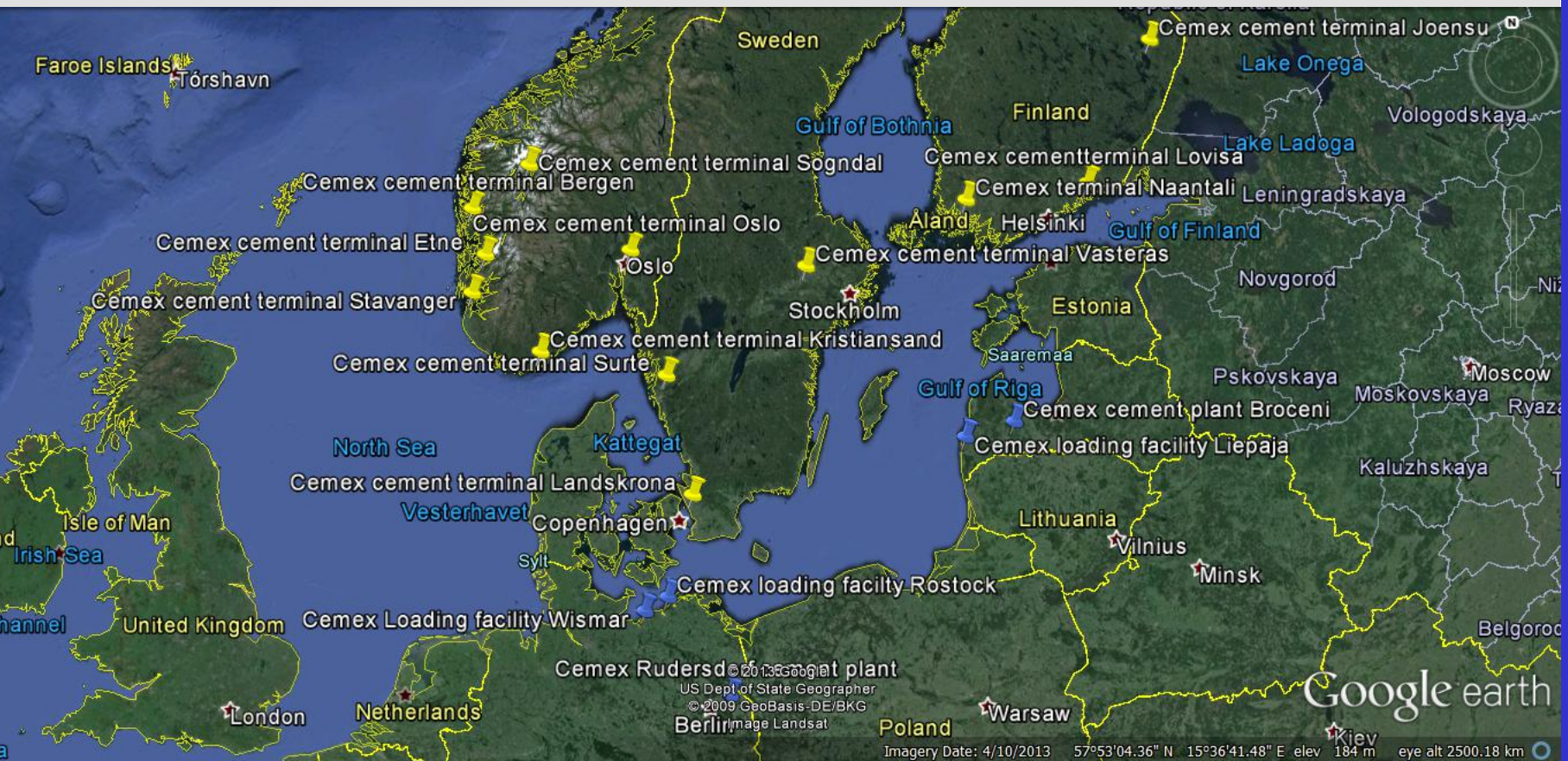


# The cement industry on Google Earth Europe



# Cemex

## Nordic Network





# Cemex

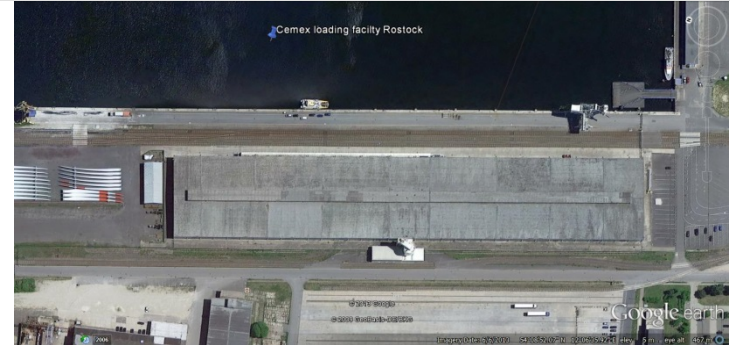
## Nordic Network Supply bases



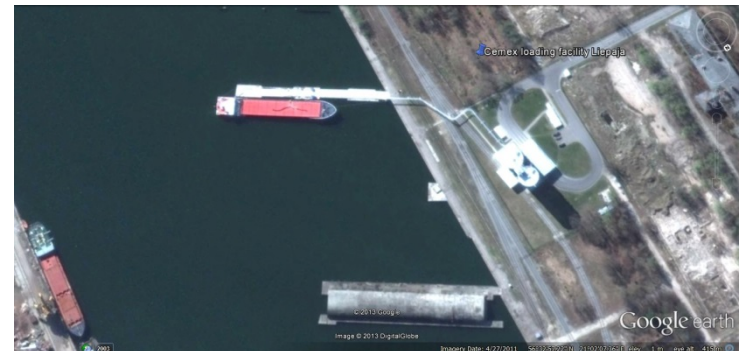
Cemex, Rudersdorf plant



Cemex, Broceni plant



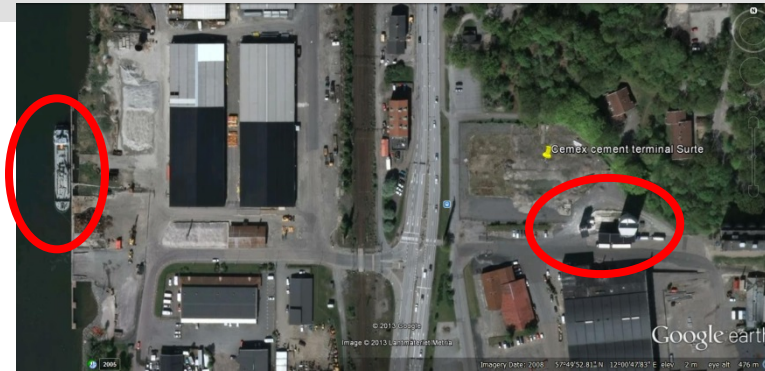
Cemex, Rostock loading facility



Cemex, Liepaja

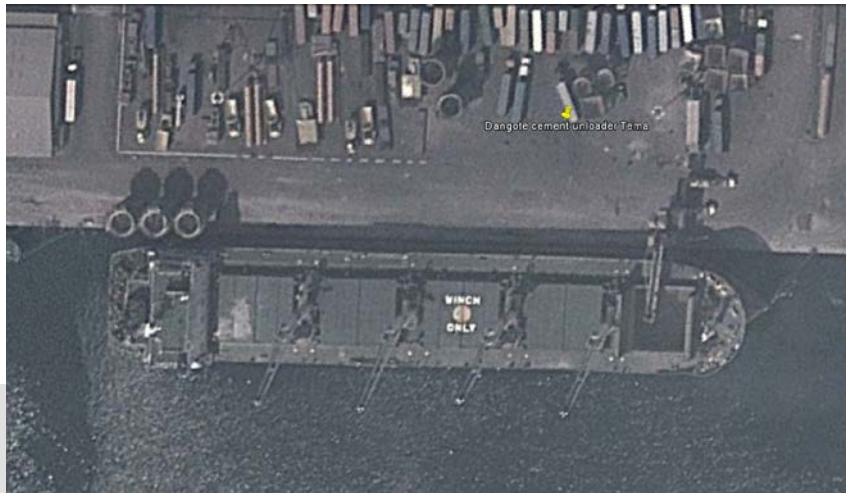
# Cemex

## Nordic Network Surte Terminal





# Some other examples of the database



Dangote cement terminal Tema, Ghana

# Some other examples of the database

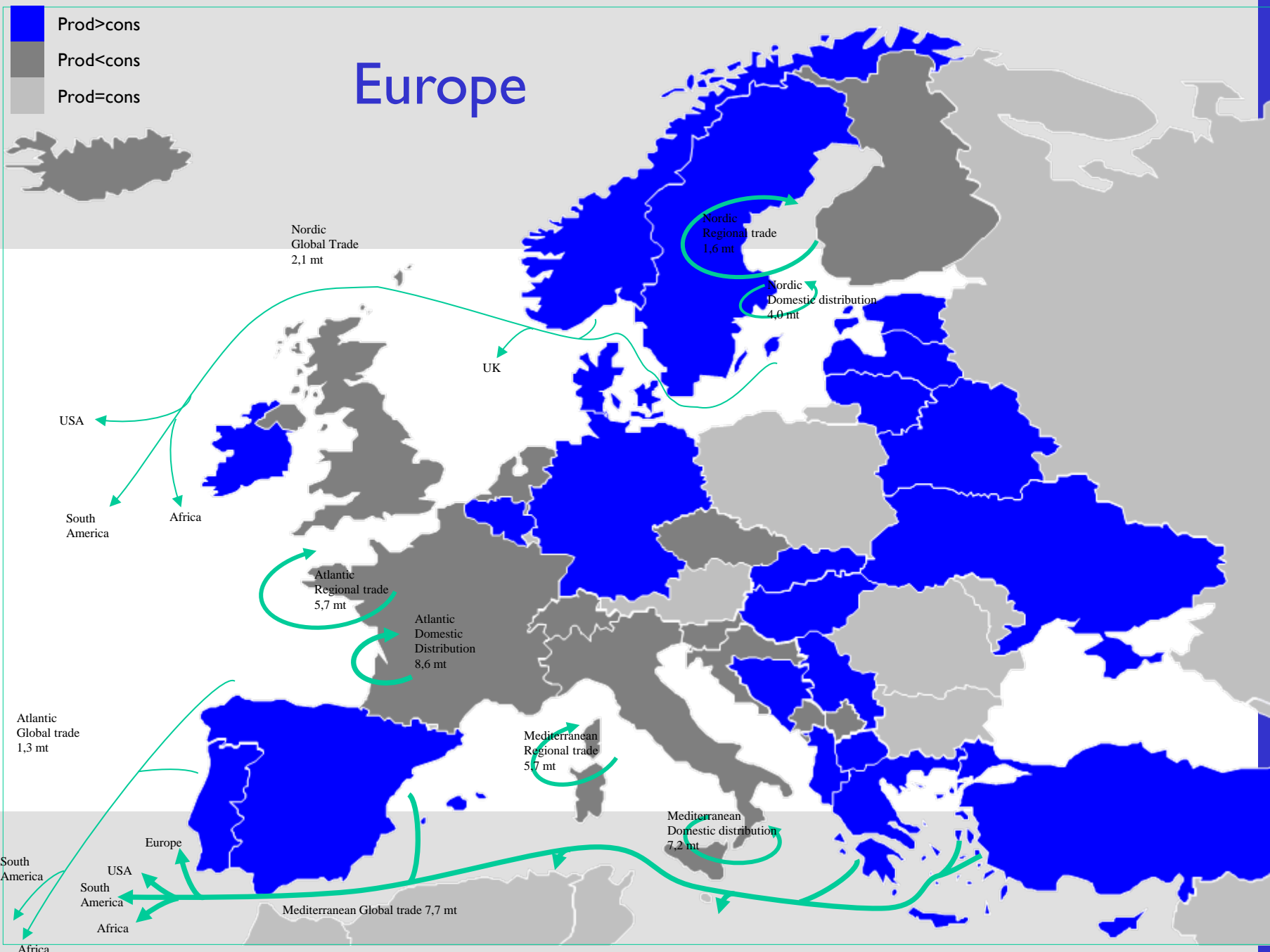


Lafarge ship loading in Nice, France



Kangan cement plant, Iran shiploading

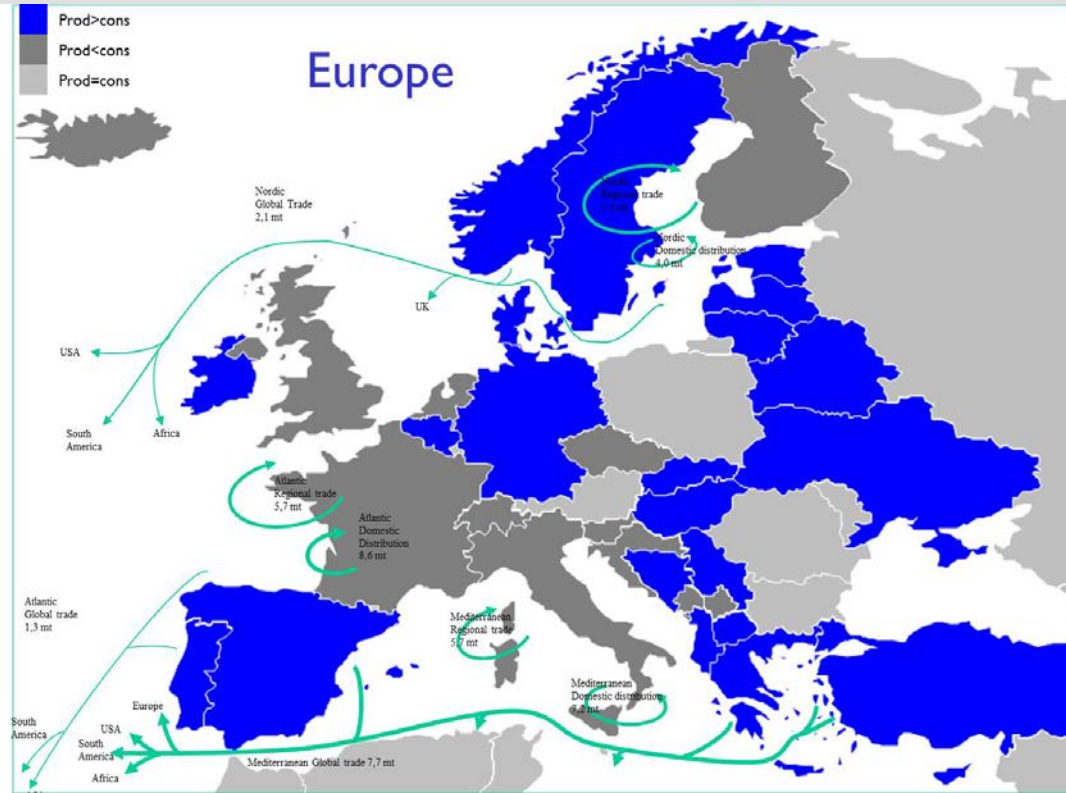
# Seaborne cement and clinker trade Regional overviews





# Europe

## Seaborne cement and clinker trade overview



Traded within Europe	12,3 mt
Exported to other continents	11,4 mt
Imports from other continents	-
Waterborne domestic distribution	<u>17,9 mt</u>
<b>Total</b>	<b>41,9 mt</b>

### Facilities overview

- 66 Cement plants involved in seaborne exports
- 221 Terminals receiving sea going vessels
- 36 Grinding terminals receiving clinker and / or slag by water

**323 Total of facilities**



Norcem (Heidelberg) terminal, Alta



Iceland cement and Aalborg (Cementir) terminals side by side in Reydarfjörður



Norcem (Heidelberg) terminal, Oslo



Norcem (Heidelberg) terminal, Alesund

### Facilities overview

84 terminals

10 cement plants involved in trade / distribution by sea

2 coastal grinding plants

### Terminals

Terminal size 2.000 – 20.000 tons

Almost all are silo terminals

All are suitable for self discharging ships

Almost no ship unloaders in the region



Embra (Cemex) terminal, Oslo



Trondheim

### Overview

4 Large trading networks

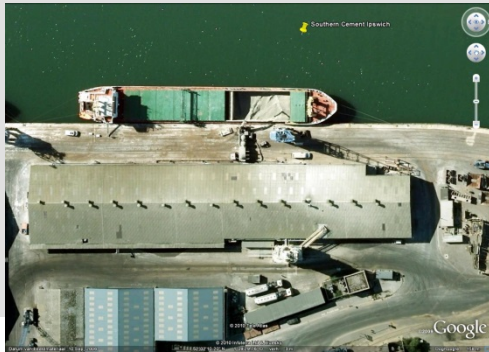
- Heidelberg
- Cemex
- Finncementi (CRH)
- Aalborg (Cementir)

Seaborne transportation

- International trade within region	1,4 mt
- Domestic distribution	3,8 mt
- International trade outside region	<u>2,2 mt</u>
<b>Total</b>	<b>7,4 mt</b>

Quantity transported by self discharging ships  
5,6 mt

# Nordic area



Southern cement terminal, Ipswich

## Facilities overview

Cement terminals	63
Cement plants involved in trade / distribution by water	19
Coastal grinding plants	25

Terminal sizes typically range between 5.000 – 12.000 tons.  
A few terminals with approx. 20.000 tons.  
Four terminals 40.000 – 65.000 tons.

About 35% of terminals has a ship unloader and is capable to receive regular bulk carriers.



MV Cementina CRH terminal, Howdendyke

## 10 Trading networks

- Lafarge
- Heidelberg
- Holcim
- Cemex
- CRH
- Tudela
- Cimpor
- Secil
- Lagan



Holcim slag grinding plant in Bremen



Holcim loading facility in Brunsbüttel

## Waterborne transportation

- Internationally traded within region 5,5 mt
- Domestic waterborne distribution 8,6 mt
- Internationally traded outside region 1,5 mt
- Total volume 15,9 mt

Total cement volume transported by self discharging ships 11,3 mt

A lot of domestic distribution by water in The Netherlands, Belgium, France and Germany is done by inland (self discharging) barges.





Lafarge ship loading operations in Nice



Cement discharge to truck in Kos



Titan cement plant, Patras

### 13 Trading networks

- |                |           |
|----------------|-----------|
| - Lafarge      | - Titan   |
| - Cemex        | - Colacem |
| - Heidelberger | - Cimsa   |
| - Holcim       | - Buzzi   |
| - Valderivas   | - Oyak    |
| - Italcementi  | - Nuh     |
| - Cementir     |           |

### Seaborne transportation

International trade within region	5,4 mt
Seaborne domestic distribution	5,5 mt
International trade outside region	<u>7,7 mt</u>
<b>Total</b>	<b>18,6 mt</b>

Quantity transported by self discharging ships	8,2 mt
Self discharging ships in Med. Region	42

### Facilities overview

Cement terminals	100
Cement plants involved in trade / distribution by water	38
Coastal grinding plants	25

Terminal sizes typically range between 5.000 – 12.000 tons and are a mix of silos and flat storage terminals. There are a few floating terminals in North Africa.

About 50% of terminals is equipped with a ship unloader.



Lafarge cement plant, Volos

## Mediterranean area



Mar Cimenti terminal, Seracusa



Heracles (Lafarge) cement terminal, Patras

From Europe 11,5

3

Clinker  
Bagged cement  
Bulk cement

From Asia  
and M.E. 11,7

1,0

8,5

4,1

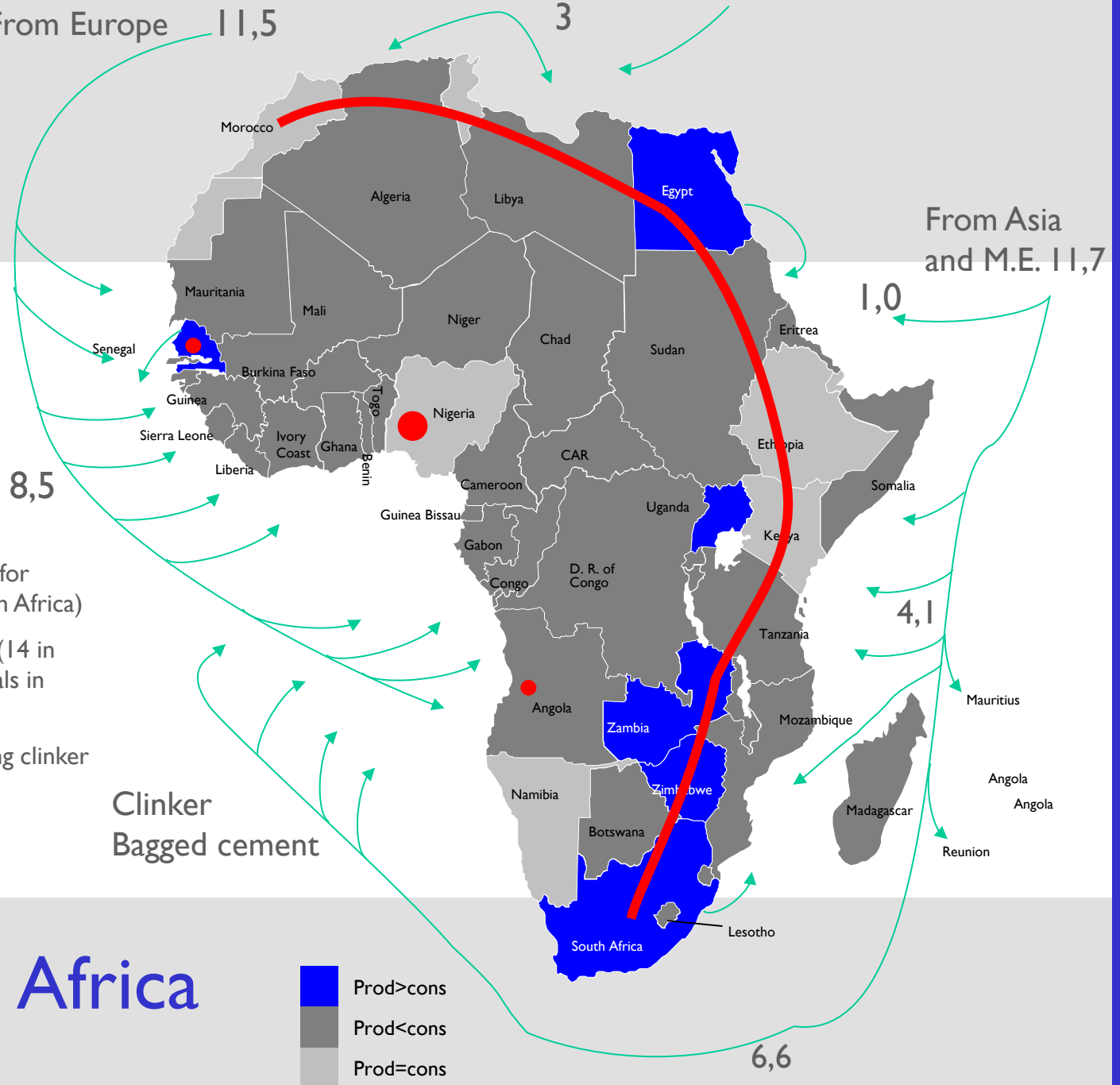
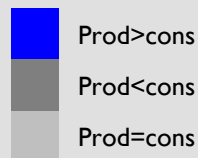
6,6

- 12 Cement plants capable for seaborne trade (8 in North Africa)
- 30 Bulk cement terminals (14 in Atlantic Islands) (8 terminals in Nigeria closing)
- 33 Grinding plants receiving clinker by sea

75 Total of facilities

Clinker  
Bagged cement

Africa





- 12 Export bases
- 14 Cement terminals
- 3 Grinding plants receiving clinker by sea

**29 Total of facilities**

# Shipping volumes

- 31,2 mt of cement and clinker moving around Africa and Middle East consisting of
  - 11,5 mt from Europe
  - 8,7 mt from Asia
  - 6,0 mt within Middle East
  - 2,0 mt within Africa
  - 3,0 mt from ME to Africa
- 31,2 mt of cement and clinker
  - 15,1 mt clinker (regular bulk carriers)
  - 9,9 mt bagged cement (regular bulk carriers)
  - 6,2 mt bulk cement (35% regular bulk carriers, 65% self discharging ships)

## Africa and Middle East



Cimgabon, Ovendo



Dangote, Tema



## Typical terminals

- Small size terminals 5.000 – 12.000 in Canary islands, Madeira, Cap Verde, Sudan, Yemen, Oman
- Combination of silos and flat storage facilities
- About 40% of the terminals has a ship unloader
- Large terminals in Nigeria (but closing), Ghana, Kuwait and Qatar (under construction) all with ship unloaders (or grab and hopper)



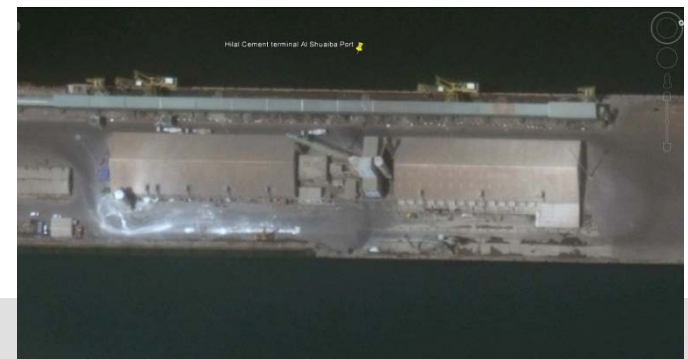
Port Sudan



Ibeto, Nigeria



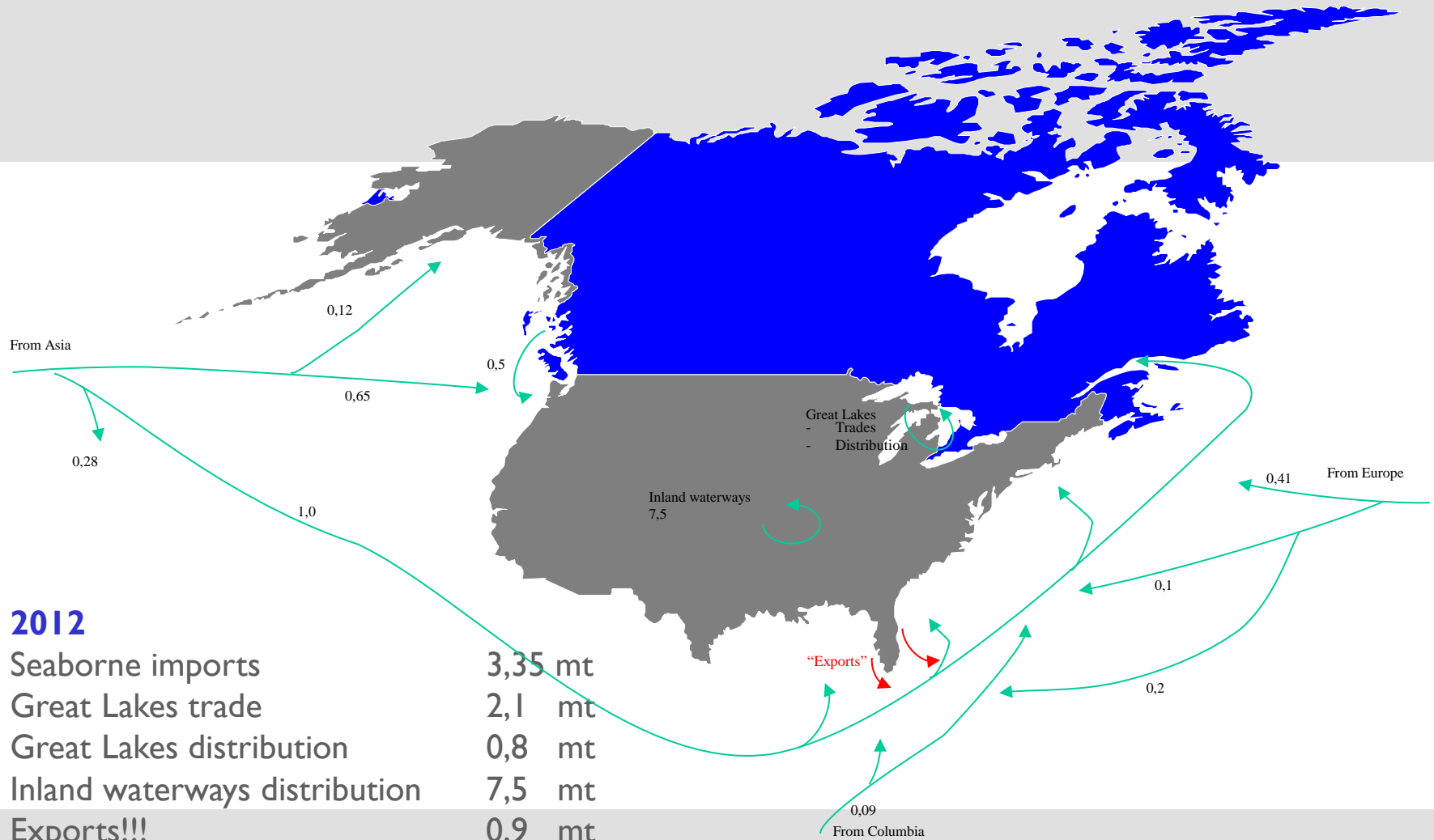
Al Hilal floating terminal - Kuwait



Al Hilal shore terminal - Kuwait



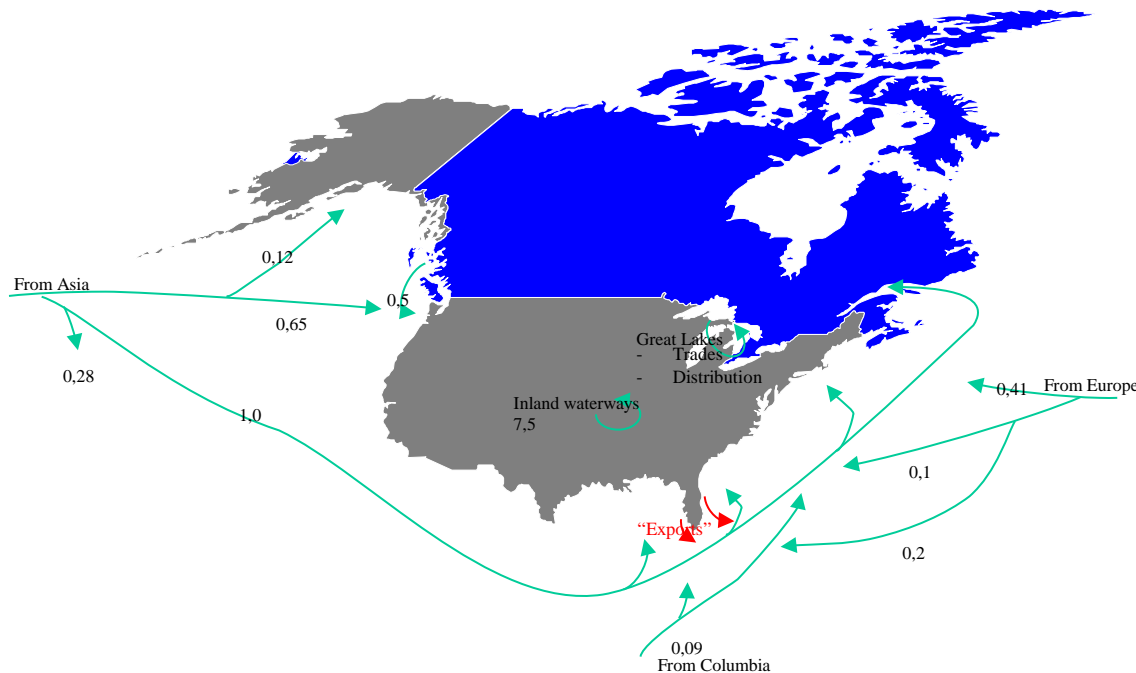
# North America



**2012**

Seaborne imports	3,35 mt
Great Lakes trade	2,1 mt
Great Lakes distribution	0,8 mt
Inland waterways distribution	7,5 mt
Exports!!!	0,9 mt
<b>Total waterborne shipments</b>	<b>14,7 mt</b>

# North America



- 30 Integrated plants with on site ship / barge loading facilities
- 1 Integrated plant railing cement to ship loading facility
- 1- 2 Integrated plants trucking cement to port and directly into ships
- 73 Terminals receiving ocean going bulk vessels
- 20 Great Lakes terminals
- 50 River terminals
- 13 Grinding plants receiving clinker and/or slag by water

**189 Total of facilities**

# Great Lakes



- 4 Networks
  - Lafarge
  - Holcim
  - St. Mary's
  - Essroc
  - 20 terminals



- 6 Waterside plants
- 8 Grinding facilities
- 7 Self discharging ships
- 2 Large push barges

2,9 mt transported by water

2,0 mt by self discharging vessel



# Coastal distribution

## North west

- 4 Networks
  - Lafarge
  - Ashgrove
  - Lehigh
- Large push barges

## North east

- Holcim
- Lafarge
- Lehigh (Heidelberg)
- Dragon
- Large push barges
- Self discharging ships

## South east

- Cemex
- Holcim
- Lehigh
- Lafarge





## Imports by sea

73 Terminals receiving ocean going bulk vessels.  
Of these terminals over 50 are equipped with a ship unloader.

Many terminals now mothballed or used for domestic distribution

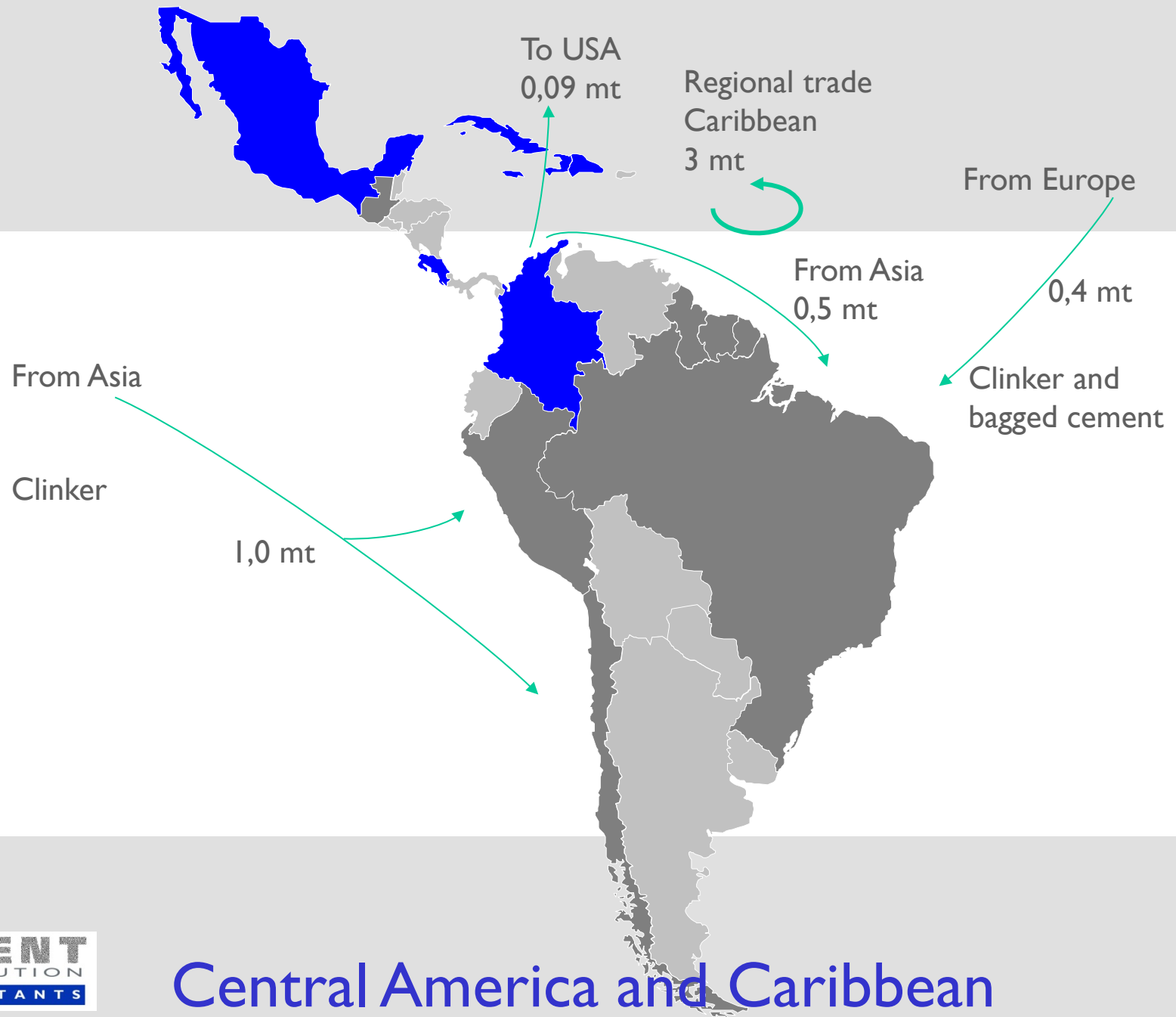




## Exports from the US

Since the end of 2009 the US has started to export cement to the Caribbean and recently even to Brazil. The exports are made from Florida using bulk trucks to transport cement to the port and blow it into the ship.





## Caribbean

- 17 Cement plants involved in seaborne trade and distribution
- 15 Terminals receiving ocean going bulk vessels
- 6 Grinding plants receiving clinker and/or slag by water

**38 Total of facilities**

## South America

- 8 Cement plants capable for seaborne trade and distribution
- 1 Terminal receiving ocean going vessels
- 7 Grinding plants receiving clinker and/or slag by water

**16 Total of facilities**



# Central America and Caribbean





## Caribbean

### 3 Trading networks

- Argos
- Cemex
- TCL

3 Million tons traded regionally by sea of which 2,1 mt by self discharging ships



### Typical terminals

The Caribbean has got a wide range of terminals ranging between 2.000 – 10.000 storage. All of them are supplied by self discharging ships. Most of them are silo terminals plus a few flat storage.





## South America

- No bulk cement sea transportation on west coast (only clinker and bagged cement imports)
- Only west coast bulk cement transport is Cemex. Imports into Manaus from Port Everglades using mv Glory Ocean since early 2013



□







# Regional overview North East Asia



Total exports in area 35,3 mt

of which :

- Imported within the area 8,0 mt
- Exported to Asia – Australia region 16,6 mt
- Global exports 10,7 mt

Domestic distribution

Japan	22 mt
South Korea	9,0 mt
China	?? mt
Hong Kong	2,3 mt
Taiwan	5,2 mt
Total	38,5 mt + China

Total waterborne cement and clinker movements  
in area 73,8 mt + China domestic of which 62 mt  
by self discharging ship





# Regional overview South East Asia

Total exports in area 19,7 mt

Total imports

- From within the area 4,3 mt
- From within the Asia – Australia region 7,1 mt

Total exports outside the area

- To the Asia – Australia region 10,6 mt
- Global exports 3,2mt

Domestic distribution by water

Philippines 2,2 mt

Vietnam 9,2 mt

Malaysia 0,6 mt

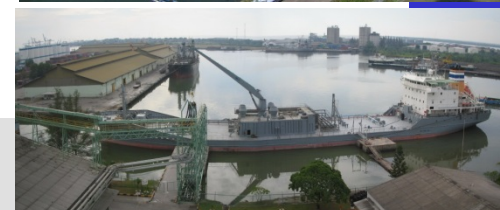
Thailand 0 mt

Indonesia 11 mt

Total 23 mt

Approx. 22 million tons transported by  
self discharging cement carriers

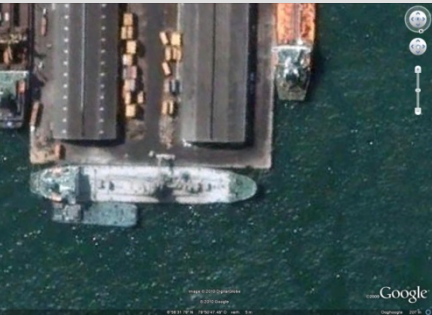
## Cement and clinker trade flows in Asia







# Regional overview South Asia



Total exports in area

3,4 mt

Total imports

- From within the area 1,85 .mt
- From within the Asia – Australia region 18 mt

Total exports outside the area

- To the Asia – Australia region 0 mt
- Global exports 0,9 mt

Domestic distribution by water:

Bangladesh	10 mt (all clinker)
India	5 mt
Sri Lanka	0,5 mt
<b>Total</b>	<b>15,5 mt</b>



Approx. 9 million tons transported by  
self discharging cement carriers  
**Cement and clinker trade flows in Asia**



1,0 mtpy clinker & cement  
(Thailand, Indonesia)



0,9 mtpy clinker & cement  
(China, Taiwan)

0,010 mtpy cement  
(to Pacific)

0,050 mtpy cement  
(to Pacific)

<u>Australia</u>	
Exports by water	0,01
Imports by water	2,4
Domestic distribution by water	5,0
Waterside plants	3

<u>New Zealand</u>	
Exports by water	0,02
Domestic distribution by water	0,9
Waterside plants	2

- Exports from Australia
- Exports from New Zealand
- Exports from others into region

- = surplus capacity
- = shortage capacity
- = neutral

All figures 2011 (est.)



# 2012 Global seaborne cement and clinker trade flows (est.)



Regional seaborne exports  
Global seaborne exports  
Waterborne domestic distribution  
Total

46 mt  
52 mt  
106 mt (excl. China)  
204 mt





# THANK YOU

[adligthart@cementdistribution.com](mailto:adligthart@cementdistribution.com)

[www.cementdistribution.com](http://www.cementdistribution.com)

